DVP-NS715P

RMT-D145A

SERVICE MANUAL

US Model
Canadian Model

Self Diagnosis Supported model

Photo: Titanium gray type

SPECIFICATIONS

System

Laser: Semiconductor laser
Signal format system: NTSC

Audio characteristics

Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)/DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB (LINE OUT L/R (AUDIO) 1/2 jacks only)
Harmonic distortion: 0.003 %
Dynamic range: DVD VIDEO: 103 dB/CD: 99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

The signals from LINE OUT L/R (AUDIO) 1/2 jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

Outputs

(**Jack name:** Jack type/Output level/Load impedance)
LINE OUT (AUDIO) 1/2: Phono jack/2 Vrms/10 kilohms
DIGITAL OUT (OPTICAL): Optical output jack/–18 dBm (wave length: 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT(Y, P_B, P_R): Phono jack/Y: 1.0 Vp-p/P_B, P_R: 0.7 Vp-p/75 ohms
LINE OUT (VIDEO) 1/2: Phono jack/1.0 Vp-p/75 ohms
S VIDEO OUT 1/2: 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.286 Vp-p/75 ohms

General

Power requirements: 120 V AC, 60 Hz
Power consumption: 13 W
Dimensions (approx.): 430 × 74 × 255 mm (17 × 2 7/8 × 10 1/8 in.) (width/height/depth) incl. projecting parts
Mass (approx.): 2.4 kg (5 19/64 lb)
Operating temperature: 5 °C to 35 °C (41 °F to 95 °F)
Operating humidity: 25 % to 80 %

Supplied accessories

See page 15.

Specifications and design are subject to change without notice.

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DVD VIDEO COMPACT disc DIGITAL VIDEO **SACD/DVD PLAYER**

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

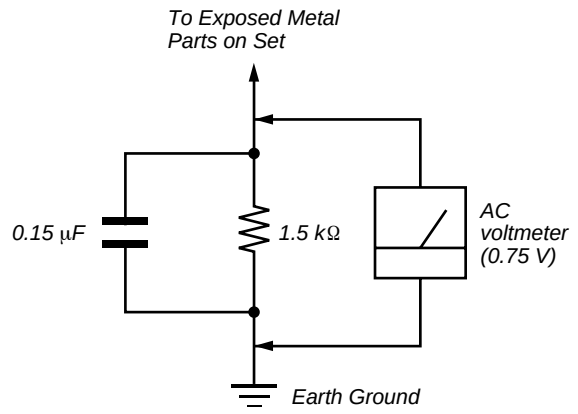

Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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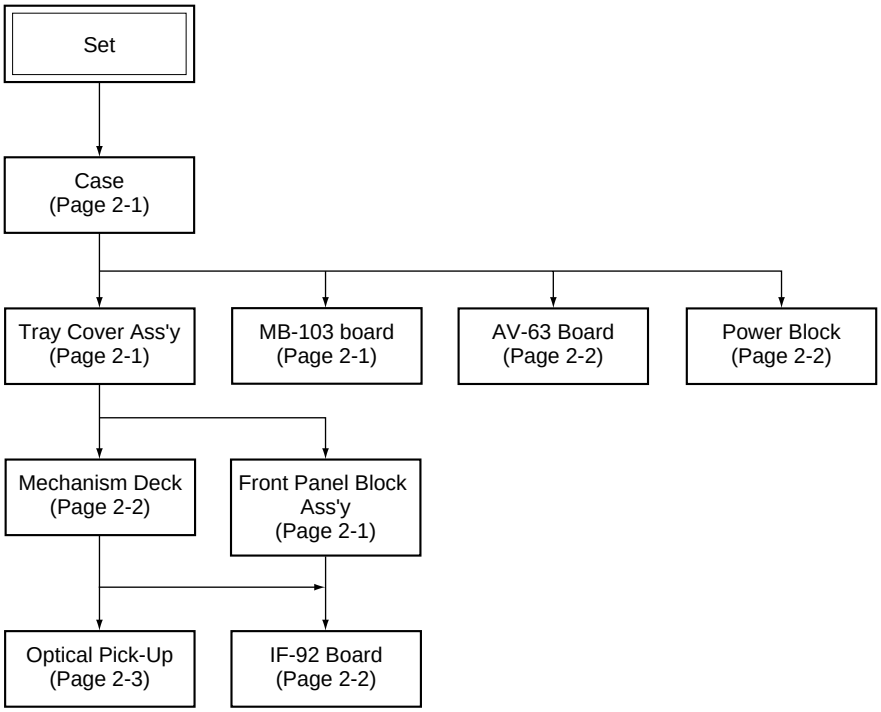
SERVICE NOTE

1. DISASSEMBLY

• This set can be disassembled in the order shown below.



2. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of the arrow Ⓐ. (See Fig. 1)
2) Draw out the tray in the direction of the arrow Ⓑ, and remove a disc. (See Fig. 1)

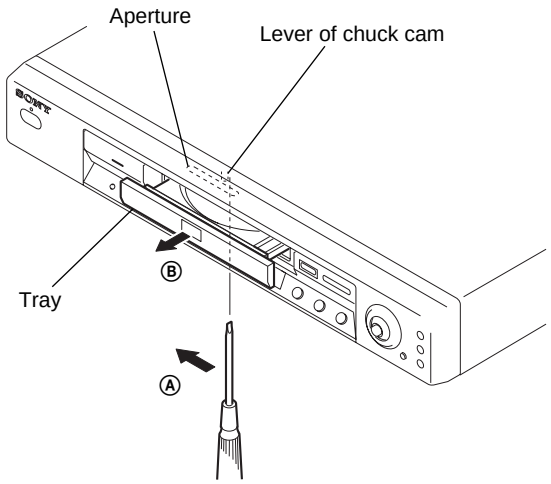


Fig. 1

1) Remove the case from the set. (Refer to 2-1)
2) Remove the MB-103 board from the set. (Refer to 2-4)
3) Set the MB-103 board as shown in Fig. 2.

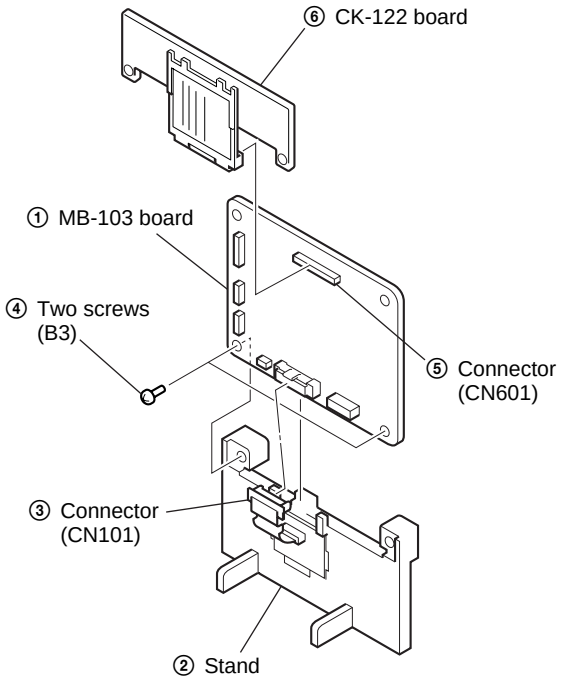
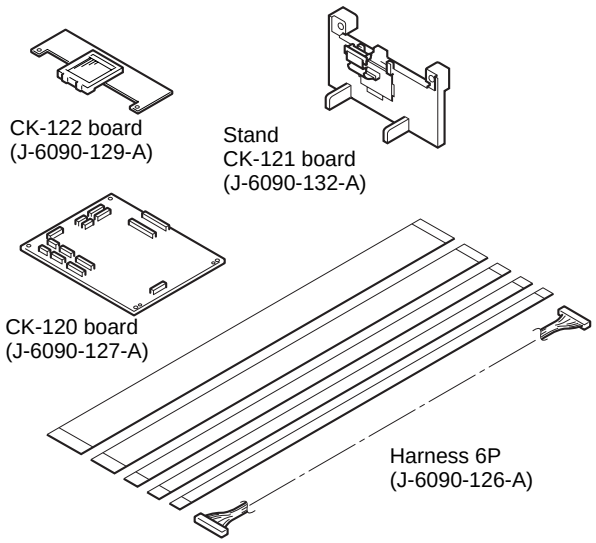


Fig. 2

3. HOW TO SERVICE MB-103 BOARD

• Use the service jig.



Five flexible flat cables

FFC 26P	J-6090-117-A
FFC-9P	J-6090-118-A
FFC-5P	J-6090-119-A
FFC-15P	J-6090-121-A
FFC 25P	J-6090-122-A

4) Set the CK-120 board as shown in Fig. 3.

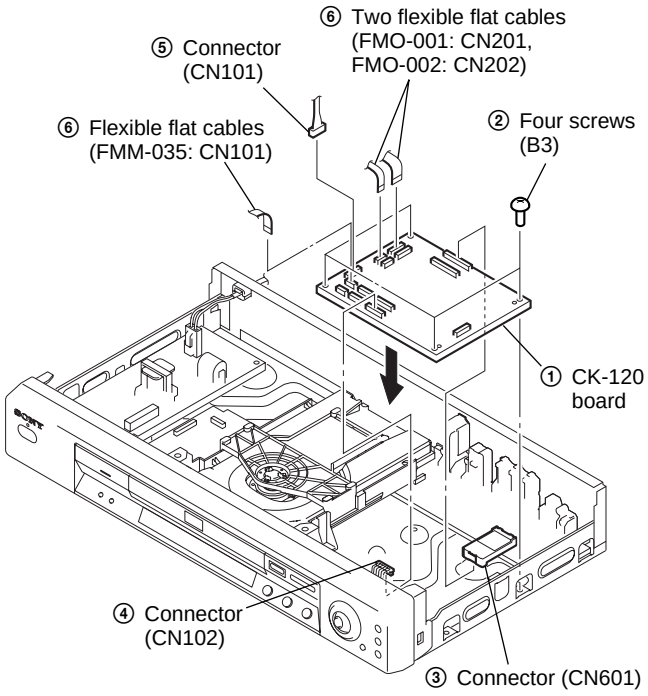

⑥ Two flexible flat cables (FMO-001: CN201, FMO-002: CN202)
⑤ Connector (CN101)
⑥ Flexible flat cables (FMM-035: CN101)
② Four screws (B3)
① CK-120 board
④ Connector (CN102)
③ Connector (CN601)

Fig. 3

5) Set the four flexible flat cables as shown in Fig. 4.

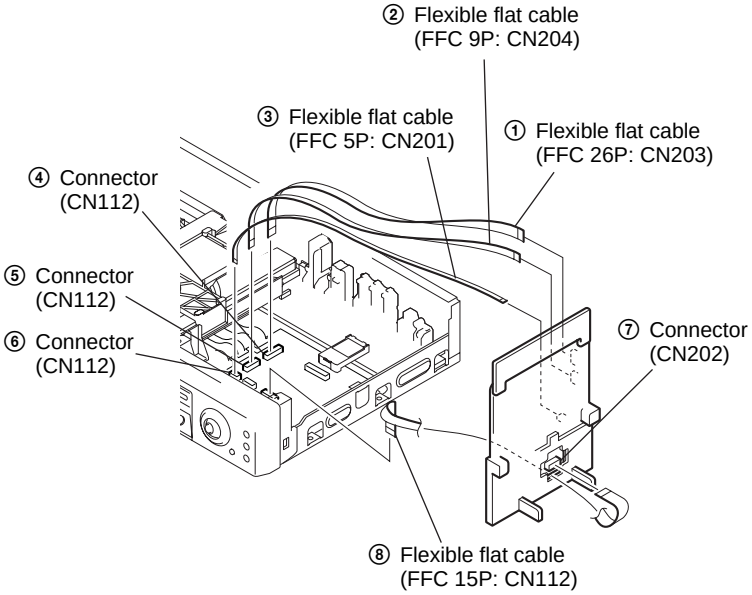


Fig. 4

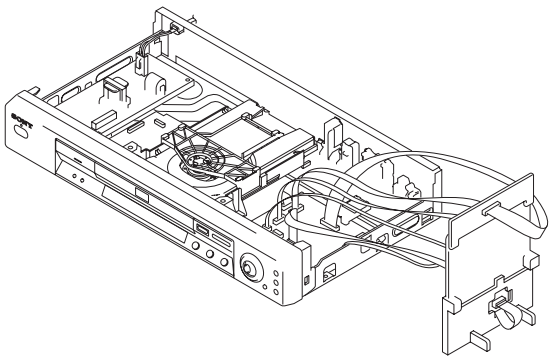


Fig. 6

6) Set the flexible flat cable and harness as shown in Fig. 5.

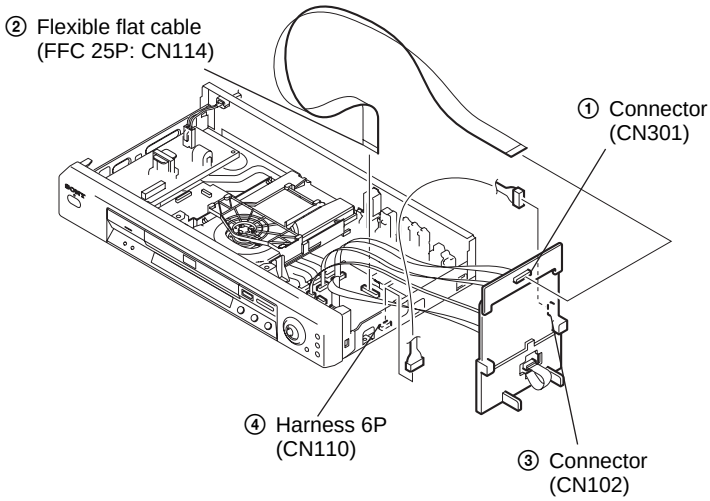


Fig. 5

SECTION 1 GENERAL

This section is extracted from instruction manual (3-074-927-11).

About this Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- The meaning of the icons used in this manual is described below:

Icon	Meaning
DVD-V	Functions available for DVD VIDEOs or DVD-Rs/DVD-RWs in video mode
DVD-RW	Functions available for DVD-RWs in VR (Video Recording) mode
VCD	Functions available for VIDEO CDs or CD-Rs/CD-RWs in video CD format
DATA CD	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks)
CD	Functions available for music CDs or CD-Rs/CD-RWs in music CD format

* MP3 (MPEG 1 Audio Layer 3) is a standard format defined by ISO/MPEG which compresses audio data.

"DVD" may be used as a general term for DVD VIDEOs, DVD-Rs, and DVD-RWs.

This Player Can Play the Following Discs

Format of discs	
DVD VIDEO (page 73)	DVD VIDEO
DVD-RW (page 73)	DVD RW
VIDEO CD	COMPACT disc DIGITAL VIDEO
Music CD	COMPACT disc DIGITAL AUDIO

"DVD VIDEO" and "DVD-RW" are trademarks.

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labeled with identical region codes. This system is used to protect copyrights.

DVD VIDEOs labeled (ALL) will also play on this player.

If you try to play any other DVD VIDEO, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD VIDEO, no region code indication may be labeled even though playing the DVD VIDEO is prohibited by area restrictions.

Example of discs that the player cannot play

The player cannot play the following discs:

- All CD-ROMs (including PHOTO CDs)/ CD-Rs/CD-RWs other than those recorded in the following formats:
  –music CD format
  –video CD format
  –MP3 format that conforms to ISO9660* Level 1/Level 2, or its extended format, Joliet
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- HD layer on Super Audio CDs

* A logical format of files and folders on CD-ROMs, defined by ISO (International Standard Organization).

Also, the player cannot play the following discs:

- A DVD VIDEO with a different region code.
- A disc recorded in a color system other than NTSC, such as PAL or SECAM (this player conforms to the NTSC color system).
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Note

Some DVD-Rs, DVD-RWs, CD-Rs, or CD-RWs cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device.
The disc will not play if it has not been correctly finalized. Also, discs may not play if they have been recorded with images that contain CPRM* (Content Protection for Recordable Media) protection. For more information, see the operating instructions for the recording device. Note that discs created in the Packet Write format cannot be played.

* CPRM (Content Protection for Recordable Media) is a coding technology that protects the copyright of images.

Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes about the Discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.

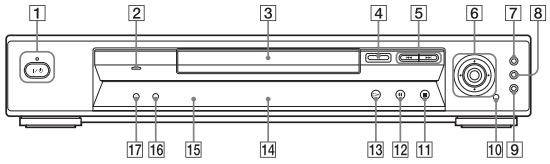
- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth. Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

For more information, refer to the pages indicated in parentheses.

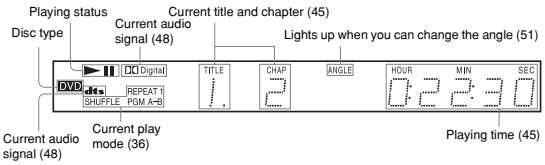
Front panel



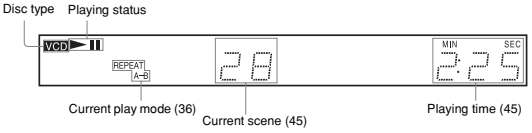
1 I/⏻ (on/standby) button/indicator (28)
Lights up in green when the power is on and lights up in red when the player is in standby mode.
2 PROGRESSIVE indicator (66)
3 Disc tray (28)
4 ⏏ (open/close) button (28)
5 ⏮/⏭ (previous/next) buttons (29)
6 ←/↑/↓/→ ENTER buttons (32)
7 TOP MENU button (32)
8 MENU button (32) (34)
9 ↩ RETURN button (29)
10 DISPLAY button (12)
11 ■ (stop) button (29)
12 ❚❚ (pause) button (29)
13 ▷ (play) button (28)
14 Front panel display (9)
15 (remote sensor) (15)
16 SURROUND button (49)
17 PICTURE MODE button (53)

Front panel display

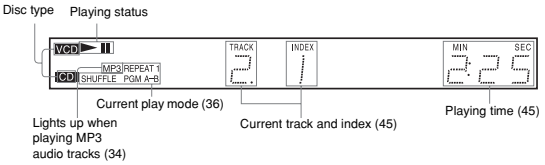
When playing back a DVD VIDEO/DVD-RW



When playing back a VIDEO CD with Playback Control (PBC) (33)

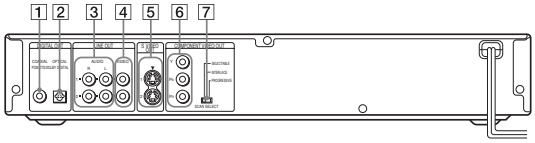


When playing back a CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)



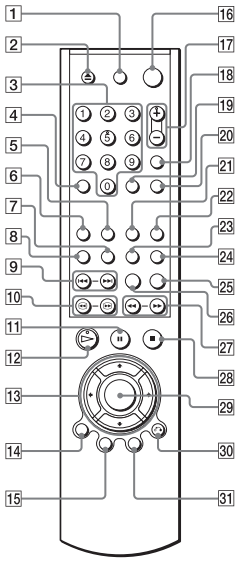
→continued

Rear panel



1 DIGITAL OUT (COAXIAL) jack (22) (23) (24)
2 DIGITAL OUT (OPTICAL) jack (22) (23) (24)
3 LINE OUT L/R (AUDIO) 1/2 jacks (21) (22) (23)
4 LINE OUT (VIDEO) 1/2 jacks (18)
5 S VIDEO OUT 1/2 jacks (18)
6 COMPONENT VIDEO OUT jacks (18)
7 COMPONENT VIDEO OUT/SCAN SELECT switch (65)

Remote



1 TV I/⏻ (on/standby) button (61)
2 ⏏ OPEN/CLOSE button (29)
3 Number buttons (32)
The number 5 button has a tactile dot.*
4 CLEAR button (36)
5 SUBTITLE button (51)
6 AUDIO button (48)
7 REPEAT button (39)
8 TIME/TEXT button (44)
9 ⏮/⏭ PREV/NEXT (previous/next) buttons (29)
10 ◀◀/▶▶ SEARCH/STEP buttons (30)
11 ❚❚ PAUSE button (29)
12 ▷ PLAY button (28)
The ▷ button has a tactile dot.*
13 ←/↑/↓/→ buttons (32)
14 DISPLAY button (12)
15 TOP MENU button (32)
16 I/⏻ (on/standby) button (28)
17 VOL (volume) +/– buttons (61)
The + button has a tactile dot.*
18 TV/VIDEO button (61)
19 ENTER button (performs the same function as 29)
20 WIDE MODE button (61)
21 ANGLE button (51)
22 PICTURE NAVI (picture navigation) button (42)
23 SUR (surround) button (49)
24 PICTURE MODE button (53)
25 REPLAY button (29)
26 SEARCH MODE button (41)
27 ◀▮ ◀◀/▶▶ ▮▶ SCAN/SLOW buttons (30)
28 ■ STOP button (29)
29 ENTER button (25)
30 ↩ RETURN button (29)
31 MENU button (32) (34)

* Use the tactile dot as a reference when operating the player.

Guide to the Control Menu Display

Use the Control Menu to select a function and to view related information. Press DISPLAY repeatedly to turn on or change the Control Menu display as follows:

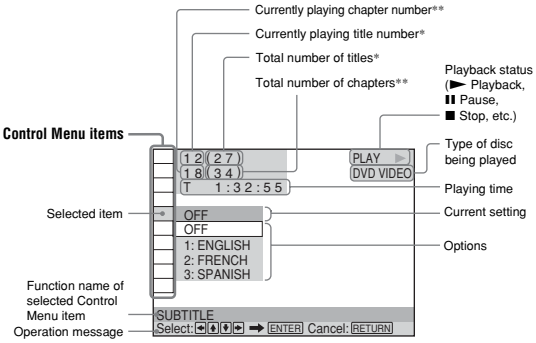
Control Menu display 1
↓
Control Menu display 2 (DVD/VIDEO CD only)
↓
ADVANCED display (DVD only. See page 46.)
↓
Control Menu display off

Hint
You can skip the ADVANCED display by setting "OFF" under "ADVANCED" in the Control Menu (page 46).

Control Menu Display

The Control Menu display 1 and 2 will show different items depending on the disc type. For details about each item, please refer to the pages in the parentheses.

Example: Control Menu display 1 when playing a DVD VIDEO.



* Displays the scene number for VIDEO CDs (PBC is on), track number for VIDEO CDs/CDs, album number for DATA CDs.
** Displays the index number for VIDEO CDs/CDs, MP3 audio track number for DATA CDs.

List of Control Menu Items

Item	Item Name, Function, Relevant Disc Type
	TITLE (page 41)/SCENE (page 41)/TRACK (page 41) Selects the title, scene, or track to be played. DVD-V DVD-RW VCD
	CHAPTER (page 41)/INDEX (page 41) Selects the chapter or index to be played. DVD-V DVD-RW VCD
	ALBUM (page 34) Selects the album to be played. DATA CD
	TRACK (page 41) Selects the track to be played. CD DATA CD
	INDEX (page 41) Selects the index to be played. CD
	ORIGINAL/PLAY LIST (page 32) Selects the type of titles (DVD-RW) to be played, the ORIGINAL one, or an edited PLAY LIST. DVD-RW
	TIME/TEXT (page 41) Checks the elapsed time and the remaining playback time. Input the time code for picture and music searching. Displays the DVD/CD/DATA CD text. DVD-V DVD-RW VCD CD DATA CD
	AUDIO (page 48) Changes the audio setting. DVD-V DVD-RW VCD CD DATA CD
	SUBTITLE (page 51) Displays the subtitles. Changes the subtitle language. DVD-V DVD-RW
	ANGLE (page 51) Changes the angle. DVD-V
	TVS (TV Virtual Surround) (page 49) Selects the surround functions. DVD-V
	ADVANCED (page 46) Displays the information (bit rate or layer) of the disc currently playing. DVD-V DVD-RW
	PARENTAL CONTROL (page 56) Set to prohibit playback on this player. DVD-V VCD CD
	SETUP (page 63) QUICK Setup (page 25) Use Quick Setup to choose the desired language of the on-screen display, the aspect ratio of the TV and the audio output. CUSTOM Setup In addition to the Quick Setup setting, you can adjust other various settings. RESET Returns the settings in "SETUP" to the default setting. DVD-V DVD-RW VCD CD DATA CD
	PROGRAM (page 36) Selects the title, chapter, or track to play in the order you want. DVD-V VCD CD

➡continued

	SHUFFLE (page 38) Plays the title, chapter, or track in random order. DVD-V VCD CD
	REPEAT (page 39) Plays the entire disc (all titles/all tracks/all albums) repeatedly or one title/chapter/track/album repeatedly. DVD-V DVD-RW VCD CD DATA CD
	A-B REPEAT (page 39) Specifies the parts you want to play repeatedly. DVD-V DVD-RW VCD CD
	BNR (page 52) Adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen. DVD-V DVD-RW VCD
	CUSTOM PICTURE MODE (page 53) Adjusts the video signal from the player. You can select the picture quality that best suits the program you are watching. DVD-V DVD-RW VCD
	DIGITAL VIDEO ENHANCER (page 55) Exaggerates the outline of the image to produce a sharper picture. DVD-V DVD-RW VCD
	PICTURE NAVIGATION (page 42) Divides the screen into 9 subscreens to help you find the scene you want quickly. DVD-V VCD

Hint

The Control Menu icon indicator lights up in green → when you select any item except "OFF," ("TVS," "PROGRAM," "SHUFFLE," "REPEAT," "A-B REPEAT," "BNR," "DIGITAL VIDEO ENHANCER" only). The "ANGLE" indicator lights up in green only when the angles can be changed. The "CUSTOM PICTURE MODE" indicator lights up in green when any setting other than "STANDARD" is selected.

Quick Overview

A quick overview presented in this guide will give you enough information to start using the player for your enjoyment. To use the surround sound features of this player, refer to "Hookups" on page 18.

Notes

- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the power cord of each component before connecting.

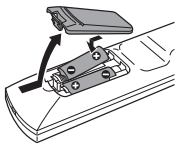
Step 1: Unpacking

Check that you have the following items:

- Audio/video cord (pinplug × 3 ⟷ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)

Step 2: Inserting Batteries into the Remote

You can control the player using the supplied remote. Insert two Size AA (R6) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor on the player.

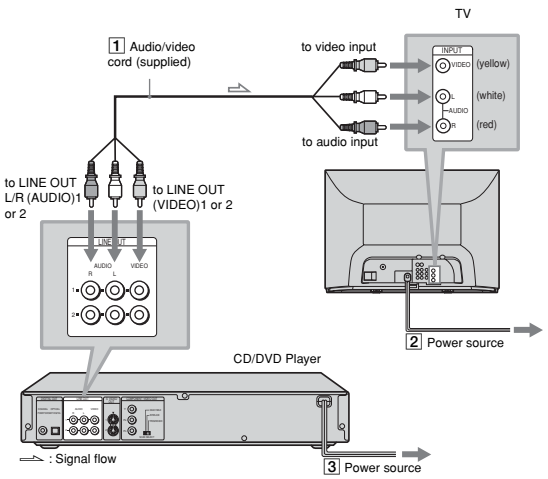


Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or a lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Step 3: TV Hookups

Connect the supplied audio/video cord and the power cord in the order (1~3) shown below. Be sure to connect the power cord last.



When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen.
If you want to change the aspect ratio, please refer to page 65.

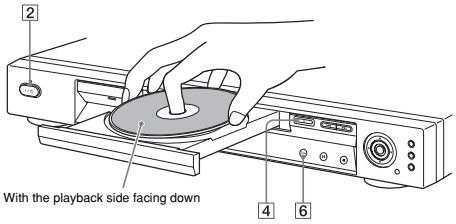
When connecting to a TV that accepts progressive (480p) format signals

You need to use the COMPONENT VIDEO OUT jacks to view progressive signals. Hook up your TV using pattern C on page 18, and then run Quick Setup on page 25.

Hint

When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT (VIDEO) 1/2 jack on the player to the TV's video input jack, and connect the LINE OUT L/R (AUDIO) 1/2 jacks to the TV's audio input jack.

Step 4: Playing a Disc



1 Turn on the TV.

2 Press I/⏻ on the player.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

4 Press ⏏ on the player to open the disc tray.

5 Place the disc on the tray with the playback side facing down.

6 Press ▷.

The disc tray closes and the player begins playing the disc.

After Step 6

Depending on the disc, a menu may be displayed on the TV screen. If so, select the item you want from the menu and play the DVD VIDEO (page 32) or VIDEO CD disc (page 33).

To stop playing

Press ■.

To remove the disc

Press ⏏.

To turn off the player

Press I/⏻. The player enters standby mode and the power indicator lights up in red.

Hooking Up the Player

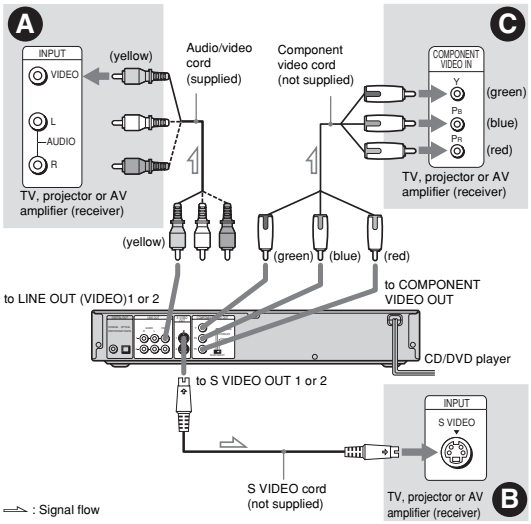
Follow Steps 1 to 4 to hook up and adjust the settings of the player.
Before you start, disconnect the power cords, check that you have all of the supplied accessories, and insert the batteries into the remote (page 15).

Notes

- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.

Step 1: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns A through C, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).

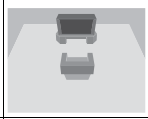
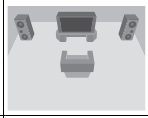
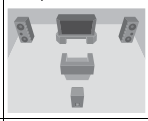
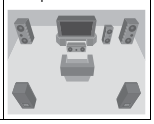


Step 2: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

Select a connection

Select one of the following connections, A through D.

Components to be connected	Connection	Your setup
TV • Surround effects: TVS DYNAMIC (page 50), TVS WIDE (page 50)	A (page 21)	example 
Stereo amplifier (receiver) and two speakers • Surround effects: TVS STANDARD (page 50) or **MD deck/DAT deck** • Surround effects: none	B (page 22)	example 
AV amplifier (receiver) having a Dolby* Surround (Pro Logic) decoder and 3 to 6 speakers • Surround effects: Dolby Surround (Pro Logic) (page 73)	C (page 23)	example 
AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder and 6 speakers** • Surround effects: Dolby Digital (5.1ch) (page 73), DTS (5.1ch) (page 73)	D (page 24)	example 

* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.
** "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

A If you are connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.

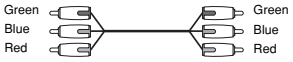
Use the red and white plugs to connect to the audio input jacks (page 21). (Do this if you are connecting to a TV only.)

B If you are connecting to an S VIDEO input jack

Connect an S VIDEO cord (not supplied). You will enjoy high quality images.

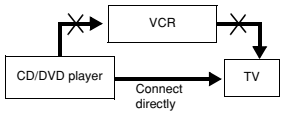
C If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, P_B, P_R)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images. If your TV accepts progressive (480p) format signals, you must use this connection and set "COMPONENT OUT" to "PROGRESSIVE" in "SCREEN SETUP" (page 65).



Notes

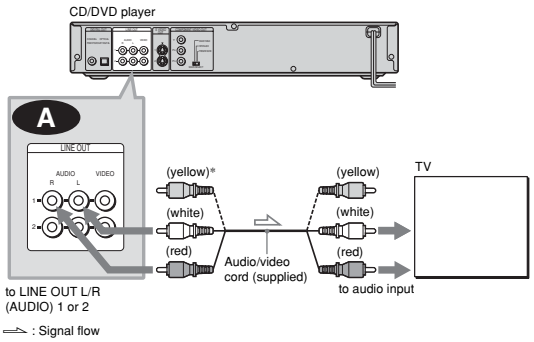
- Do not connect the player to a VCR. If you pass the player signals via the VCR, you may not receive a clear image on the TV screen.



- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In the case of 480 progressive scan picture problems, it is recommended that you switch the connection to the standard definition output. If there are questions regarding your Sony TV set's compatibility with this model 480p DVD player, please contact our customer service center.

A Connecting to your TV

This connection will use your TV speakers for sound.



* The yellow plug is used for video signals (page 18).

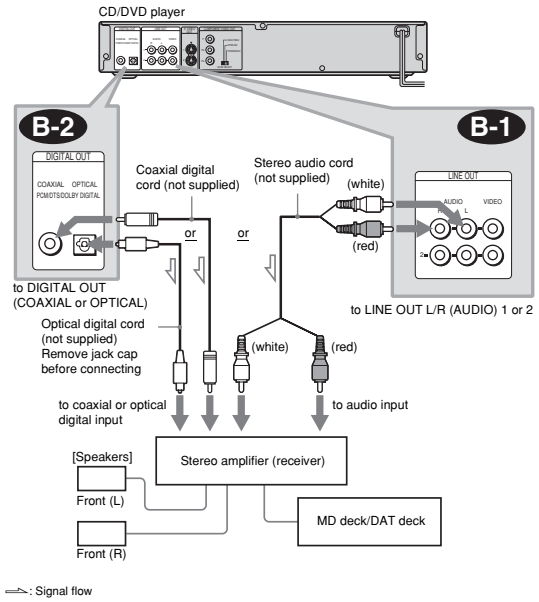
Hint

When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) 1/2 jacks to the TV's audio input jack.

→continued

B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

If the stereo amplifier (receiver) has audio input jacks L and R only, use B-1. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use B-2. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).



Hint

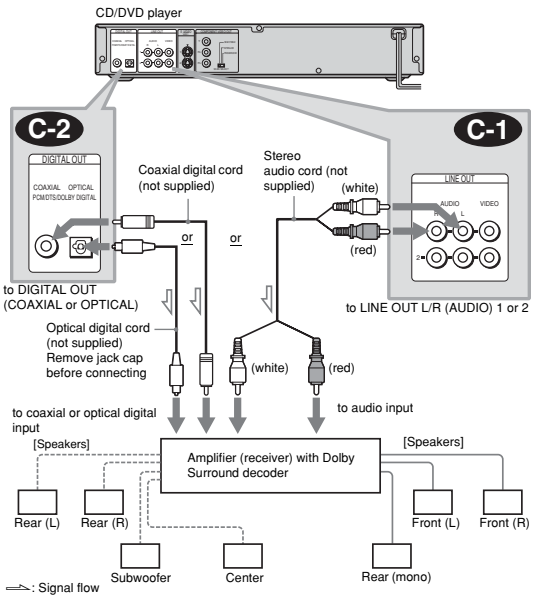
In connection B-1, you can use the supplied audio/video cord instead of using a separate stereo audio cord.

Note

If you select one of the TVS effects (page 49) while playing a disc, no sound will come from your speakers with the B-2 connection.

C Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.
If your amplifier (receiver) has L and R audio input jacks only, use C-1. If your amplifier (receiver) has a digital input jack, use C-2.

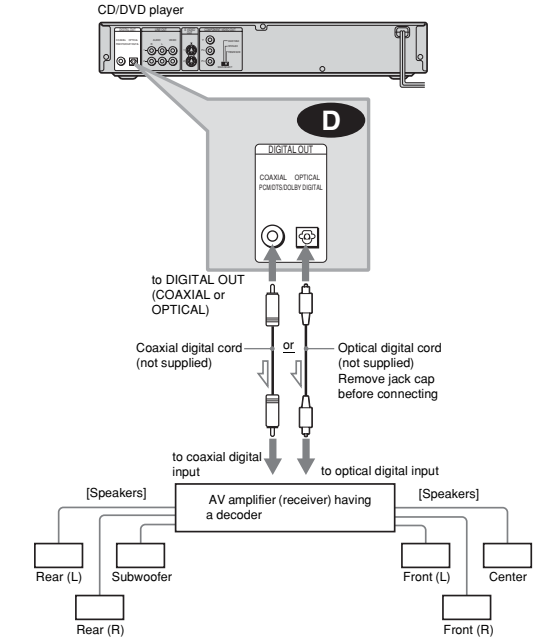


Note

When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder and 6 speakers

This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are unable to enjoy the surround sound effects of this player.



Note

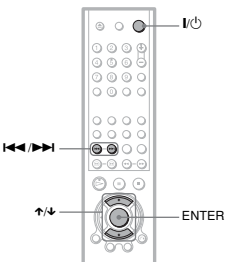
After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON" in Quick Setup (page 25).

Step 3: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

Step 4: Quick Setup

Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press ▶▶I. To return to the previous adjustment, press I◀◀.



1 Turn on the TV.

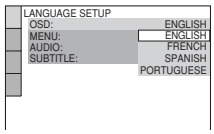
2 Press I/⏻.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

"Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Menu to run Quick Setup (page 64).

4 Press ENTER without inserting a disc.

The Setup Display for selecting the language used in the on-screen display appears.

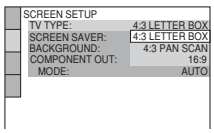


5 Press ↑/↓ to select a language.

The player uses the language selected here to display the menu and subtitles as well.

6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.



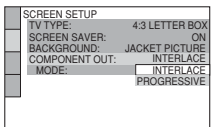
7 Press ↑/↓ to select the setting that matches your TV type.

◆ If you have a 4:3 standard TV
• 4:3 LETTER BOX or 4:3 PAN SCAN (page 65)

◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
• 16:9 (page 65)

8 Press ENTER.

The Setup Display for selecting the type of video signal appears.



9 Press ↑/↓ to select the type of signals you wish to output to your TV.

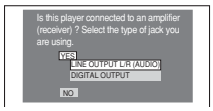
Select "PROGRESSIVE" only if you have made video connection C (page 18) and wish to view progressive video signals.

◆ Interlace format TV (standard TV)
• INTERLACE (pages 65)

◆ Progressive format TV
• PROGRESSIVE (pages 65)

10 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.


Is this player connected to an amplifier (receiver) ? Select the type of jack you are using.
YES
LINE OUTPUT L/R (AUDIO)
DIGITAL OUTPUT
NO

11 Press ↑/↓ to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

Choose the item that matches the audio connection you selected on pages 21 to 24 (A through D).

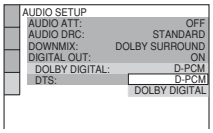
A
• If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.

B-1 C-1
• Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.

B-2 C-2 D
• Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

12 Press ↑/↓ to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

Choose the signal that matches the audio connection you selected on pages 22 to 24 (B through D).

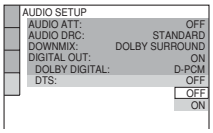


B-2 C-2
• D-PCM (page 69)

D
• DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 69)

13 Press ENTER.

"DTS" is selected.



14 Press ↑/↓ to select whether or not you wish to send a DTS signal to your amplifier (receiver).

Choose the item that matches the audio connection you selected on pages 22 to 24 (B through D).

B-2 C-2
• OFF (page 69)

D
• ON (only if the amplifier (receiver) has a DTS decoder) (page 69)

15 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 22 to 24 (B through D). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 63 for using the Setup Display.

Audio Connection (pages 21 to 24)

A
• No additional settings are needed.

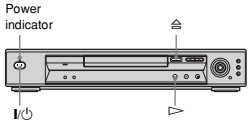
B-1 C-1
• Set "DOWNMIX" to "DOLBY SURROUND" (page 69)
• If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 68)

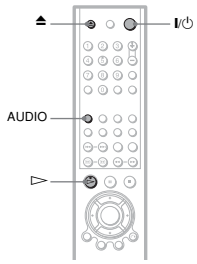
B-2 C-2 D
• Set "DOWNMIX" to "DOLBY SURROUND" (page 69)
• Set "DIGITAL OUT" to "ON" (page 69)

Playing Discs DVD-V

DVD-RW VCD CD DATA CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.





1 Turn on your TV.

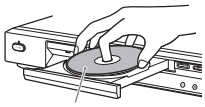
2 Press I/⏻.

The player turns on and the power indicator lights up in green.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

◆ When using an amplifier (receiver)
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

4 Press ⏏ on the player, and place a disc on the disc tray.



With the playback side facing down

5 Press ▷.

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).
Depending on the disc, a menu may appear on the TV screen. For DVD VIDEOs, see page 32. For VIDEO CDs, see page 33.

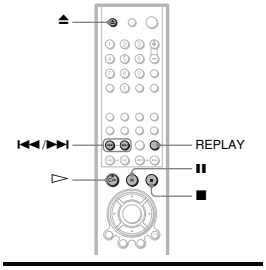
To turn off the player
Press I/⏻. The player enters standby mode.

Hint
You can have the player turn off automatically whenever you leave it in stop mode for more than 30 minutes. To turn on this function, set "AUTO POWER OFF" in "CUSTOM SETUP" to "ON" (page 67).

Notes on playing DTS sound tracks on a CD
• When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jack of the player.
• Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 48).
• Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT (COAXIAL or OPTICAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 69), and may affect your ears or cause your speakers to be damaged.

Notes on playing DVD VIDEOs with a DTS sound track
• DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
• When you play a DVD VIDEO with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 69).
• If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 69). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

Additional operations



To	Operation
Stop	Press ■
Pause	Press ❚❚
Resume play after pause	Press ❚❚ or ▷
Go to the next chapter, track, or scene in continuous play mode	Press ▶▶I
Go back to the previous chapter, track, or scene in continuous play mode	Press I◀◀
Stop play and remove the disc	Press ⏏

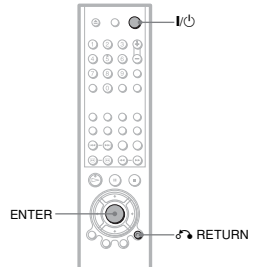
To	Operation
Replay the previous scene (DVD VIDEO only)	Press REPLAY

Hint
The Replay function is useful when you want to review a scene or dialog that you missed.

Note
You may not be able to use the Replay function with some scenes.

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.



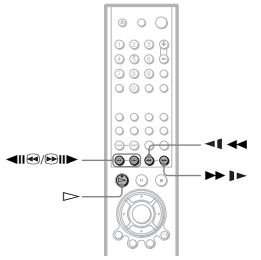
When the player is in standby mode, press RETURN, ENTER, and then I/⏻ on the remote.
The player turns on and "LOCKED" appears on the front panel display.
The ⏏ button on the player or the remote does not work while the Child Lock is set.

To unlock the disc tray
When the player is in standby mode, press RETURN, ENTER, and then I/⏻ again.

Note
Even if you select "RESET" under "SETUP" in the Control Menu (page 64), the disc tray remains locked.

Searching for a Particular Point on a Disc (Search, Scan, Slow-motion Play, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.



Note

Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

Locating a point quickly (Search)

DVD-V DVD-RW VCD CD DATA CD

During playback, keep pressing ►►II► to locate a point in the playback direction or keep pressing ◄II◄◄ to locate a point in the opposite direction. When you find the point you want, release the button to return to normal playback speed.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

DVD-V DVD-RW VCD CD DATA CD

Press ◄▮ ◄◄ or ►► ▮► while playing a disc. When you find the point you want, press ▷ to return to normal speed. Each time you press ◄▮ ◄◄ or ►► ▮► during scan, the playback speed changes. Three speeds are available. With each press the indication changes as follows:

Playback direction
×2► (DVD VIDEO/CD only) → FF1►► → FF2►►

Opposite direction
×2◄ (DVD VIDEO only) → FR1◄◄ → FR2◄◄

The "×2►"/"×2◄" playback speed is about twice the normal speed. The "FF2►►"/"FR2◄◄" playback speed is faster than "FF1►►"/"FR1◄◄."

Watching frame by frame (Slow-motion play) DVD-V DVD-RW VCD

Press ◄▮ ◄◄ or ►► ▮► when the player is in pause mode. To return to the normal speed, press ▷.
Each time you press ◄▮ ◄◄ or ►► ▮► during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
SLOW2 ▮► ↔ SLOW1 ▮►

Opposite direction (DVD only)
SLOW2 ◄▮ ↔ SLOW1 ◄▮

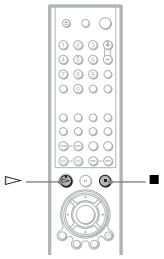
The "SLOW2 ▮►"/"SLOW2 ◄▮" playback speed is slower than "SLOW1 ▮►"/"SLOW1 ◄▮."

Playing one frame at a time (Freeze Frame) DVD-V DVD-RW VCD

When the player is in the pause mode, press ►►II► to go to the next frame. Press ◄II◄◄ to go to the preceding frame (DVD only). If you hold the button down, you can view the frames in succession. To return to normal playback, press ▷.

Resuming Playback from the Point Where You Stopped the Disc (Multi-disc Resume) DVD-V VCD

The player stores the point where you stopped the disc for up to 40 discs and resumes playback the next time you insert the same disc. When you store a resume playback point for the 41st disc, the resume playback point for the first disc is deleted.



1 While playing a disc, press ■ to stop playback.

"RESUME" appears on the front panel display.

2 Press ▷.

The player starts playback from the point where you stopped the disc in Step 1.

Hints

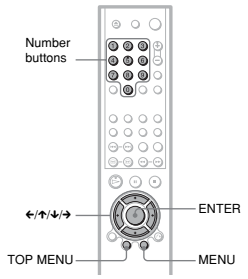
- To play from the beginning of the disc, press ■ twice, then press ▷.
- For DVD-RWs in VR mode, CDs, and DATA CDs, the player remembers the resume playback point for the current disc unless the disc tray is opened, the power cord is disconnected, or only for DATA CDs, the player enters standby mode.

Notes

- "MULTI-DISC RESUME" in "CUSTOM SETUP" must be set to "ON" (default) for this function to work (page 68).
- The resume playback point for the current disc is cleared when:
  – you change the play mode.
  – you change the settings on the Setup Display.
- This function may not work with some discs.
- Resume Play does not work during Shuffle Play and Program Play.

Using the DVD's Menu DVD-V

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button.
When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.



1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen.
The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ or the number buttons to select the item you want to play or change.

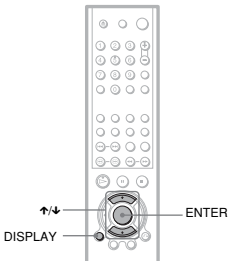
3 Press ENTER.

Hint

The disc's menu also appears when the TOP MENU or MENU button on the player is pressed.

Selecting "ORIGINAL" or "PLAY LIST" on a DVD-RW Disc DVD-RW

Some DVD-RW discs in VR (Video Recording) mode have two types of titles for playback: originally recorded titles (ORIGINAL) and titles that can be created on recordable DVD players for editing (PLAY LIST). You can select the type of titles to be played.

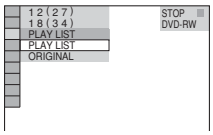


1 Press DISPLAY in stop mode.

The Control Menu appears.

2 Press ↑/↓ to select (ORIGINAL/PLAY LIST), then press ENTER.

The options for "ORIGINAL/PLAY LIST" appear.



3 Press ↑/↓ to select the setting.

- PLAY LIST: plays the titles created from "ORIGINAL" for editing.
- ORIGINAL: plays the titles originally recorded.

4 Press ENTER.

To turn off the Control Menu

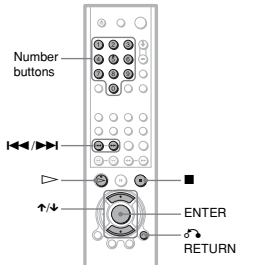
Press DISPLAY repeatedly until the Control Menu is turned off.

Note

Repeat Play and A-B Repeat Play do not work across "ORIGINAL" and "PLAY LIST" titles.

Playing VIDEO CDs with PBC Functions (PBC Playback) VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

2 Select the item number you want by pressing ↑/↓ or the number buttons.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

→continued

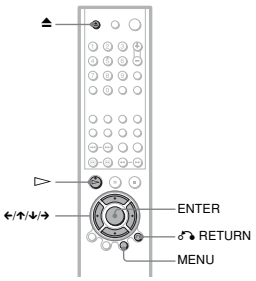
To return to the menu
Press ↩ RETURN.

Hint
To play without using PBC, press ⏮/⏭ or the number buttons while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

Note
Depending on the VIDEO CD, "Press ENTER" in Step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.

Playing an MP3 Audio Track DATA CD

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



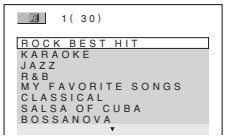
1 Press ⏏ and place a DATA CD on the disc tray.

2 Press ▷.
The disc tray closes, and the player starts to play the first MP3 audio track in the first album on the disc.

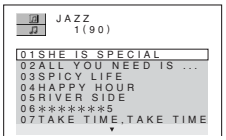
Notes
- The player can play MP3 audio tracks recorded in the following sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz.
- The playback order may be different from the edited order. See "The Playback order of MP3 audio tracks" below for details.

Selecting an album and track

1 Press MENU.
The list of MP3 albums recorded on the DATA CD appears.



2 Select an album using ↑/↓ and press ENTER.
The list of tracks contained in the album appears.



3 Select a track using ↑/↓ and press ENTER.
The selected track starts playing.
When a track or album is being played, its title is shaded.

To go to the next or previous page
Press → or ←.

To return to the previous display
Press ↩ RETURN.

To turn off the display
Press MENU.

Notes
- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as "✳."
- ID3 tags cannot be displayed.

About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs, CD-Rs, or CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks.
You can also play discs recorded in Multi Session.

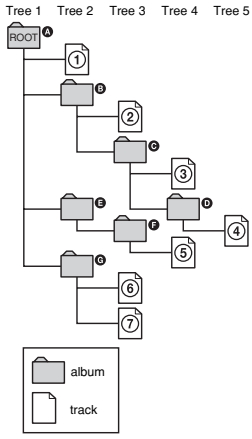
See the instructions of the CD-R/RW device or recording software (not supplied) for details on the recording format.

To play a Multi Session CD
This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back.
When audio tracks and images in music CD format or video CD format are recorded in the first session, only the first session will be played back.

Notes
- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.

The Playback order of MP3 audio tracks
The playback order of albums and tracks recorded on a DATA CD is as follows.

◆Structure of disc contents



→continued

When you insert a DATA CD and press ▷, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: Ⓒ contains Ⓓ so ④ is played before ⑤.)
When you press MENU and the list of MP3 albums appears (page 34), the albums are arranged in the following order: Ⓐ → Ⓑ → Ⓒ → Ⓓ → Ⓕ → Ⓖ. Albums that do not contain tracks (such as album Ⓔ) do not appear in the list.

Hints
- If you add numbers (01, 02, 03, etc.) to the front of the track file names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, it is recommended that you create albums of no more than two trees.

Notes
- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 999 albums and tracks in the DATA CD.
- The player can recognize up to 499 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 499 albums. Of the first 499 albums, the player will play no more than a combined total of 999 albums and tracks.

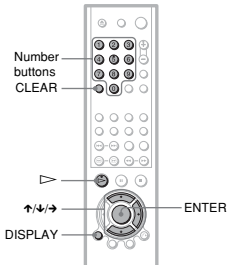
Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

You can set the following play modes:
- Program Play (page 36)
- Shuffle Play (page 38)
- Repeat Play (page 39)
- A-B Repeat Play (page 39)

Note
The play mode is canceled when:
– you open the disc tray.
– the player enters standby mode by pressing I/⏻.

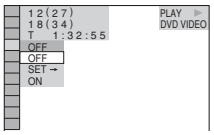
Creating your own program (Program Play) DVD-V VCD CD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own program. You can program up to 99 titles, chapters, and tracks.

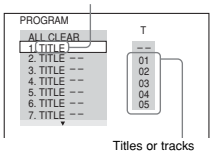


1 Press DISPLAY twice (when playing a CD, press once).
The Control Menu appears.

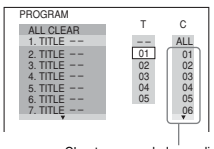
2 Press ↑/↓ to select (PROGRAM), then press ENTER.
The options for "PROGRAM" appear.



3 Press ↑/↓ to select "SET →," then press ENTER.
"TRACK" is displayed when you play a VIDEO CD or CD.

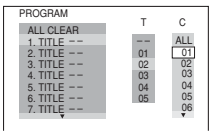


4 Press →.
The cursor moves to the title or track row "T" (in this case, "01").

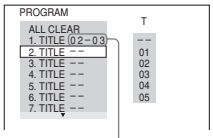


5 Select the title, chapter, or track you want to program.

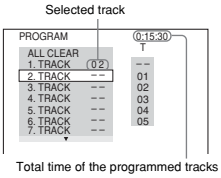
◆ When playing a DVD VIDEO
For example, select chapter "03" of title "02."
Press ↑/↓ or the number buttons to select "02" under "T," then press ENTER.



Next, press ↑/↓ or the number buttons to select "03" under "C," then press ENTER.



◆ When playing a VIDEO CD or CD
For example, select track "02."
Press ↑/↓ or the number buttons to select "02" under "T," then press ENTER.



6 To program other titles, chapters, or tracks, repeat Steps 4 to 5.
The programmed titles, chapters, and tracks are displayed in the selected order.

7 Press ▷ to start Program Play.
Program Play begins.
When the program ends, you can restart the same program again by pressing ▷.

To return to normal play
Press CLEAR, or select "OFF" in Step 3. To play the same program again, select "ON" in Step 3 and press ENTER.

→continued

To turn off the display
Press DISPLAY repeatedly until the display is turned off.

To change or cancel a program

1 Follow Steps 1 through 3 of "Creating your own program (Program Play)."
2 Select the program number of the title, chapter, or track you want to change or cancel using ↑/↓ or the number buttons, and press →.
3 Follow Step 5 for new programming. To cancel a program, select "--" under "T," then press ENTER.

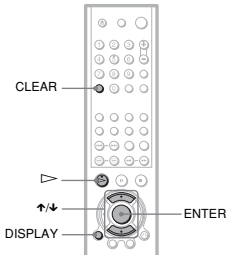
To cancel all the titles, chapters, or tracks in the programmed order

1 Follow Steps 1 through 3 of "Creating your own program (Program Play)."
2 Press ↑ and select "ALL CLEAR."
3 Press ENTER.

Hint
You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Program Play, follow the Steps of "Repeat Play" (page 39) or "Shuffle Play" (page 38).

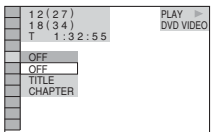
Playing in random order (Shuffle Play) DVD-V VCD CD

You can have the player "shuffle" titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.



1 Press DISPLAY twice during playback (when playing a CD, press once).
The Control Menu appears.

2 Press ↑/↓ to select (SHUFFLE), then press ENTER.
The options for "SHUFFLE" appear.



3 Press ↑/↓ to select the item to be shuffled.

◆ **When playing a DVD VIDEO**
• TITLE
• CHAPTER

◆ **When playing a VIDEO CD or CD**
• TRACK

◆ **When Program Play is activated**
• ON: shuffles titles, chapters, or tracks selected in Program Play.

4 Press ENTER.
Shuffle Play starts.

To return to normal play
Press CLEAR, or select "OFF" in Step 3.

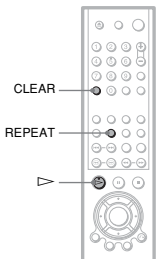
To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Hints
• You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press ▷. Shuffle Play starts.
• Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

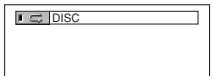
Playing repeatedly (Repeat Play)

DVD-V DVD-RW VCD CD DATA CD

You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.
You can use a combination of Shuffle or Program Play modes.



1 Press REPEAT during playback.
The following display appears.



2 Press REPEAT repeatedly to select the item to be repeated.

◆ **When playing a DVD VIDEO**
• DISC: repeats all of the titles.
• TITLE: repeats the current title on a disc.
• CHAPTER: repeats the current chapter.

◆ **When playing a DVD-RW**
• DISC: repeats all the titles of the selected type.
• TITLE: repeats the current title on a disc.
• CHAPTER: repeats the current chapter.

◆ **When playing a VIDEO CD or CD**
• DISC: repeats all of the tracks.
• TRACK: repeats the current track.

◆ **When playing a DATA CD (MP3 audio)**
• DISC: repeats all of the albums.
• ALBUM: repeats the current album.
• TRACK: repeats the current track.

◆ **When Program Play or Shuffle Play is activated**
• ON: repeats Program Play or Shuffle Play.

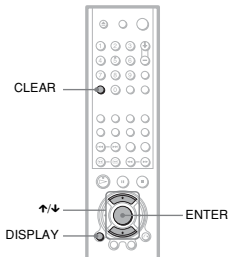
To return to normal play
Press CLEAR, or select "OFF" in Step 2.

Hints
• You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press ▷. Repeat Play starts.
• You can also select "REPEAT" from the Control Menu (page 12).

Repeating a specific portion (A-B Repeat Play)

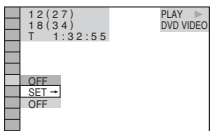
DVD-V DVD-RW VCD CD

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)

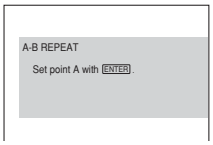


1 Press DISPLAY twice during playback (when playing a CD, press once).
The Control Menu appears.

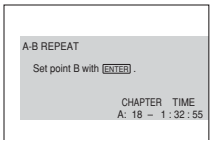
2 Press ↑/↓ to select (A-B REPEAT), then press ENTER.
The options for "A-B REPEAT" appear.



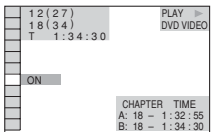
3 Press ↑/↓ to select "SET →," then press ENTER.
The "A-B REPEAT" setting display appears.



4 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.



5 When you reach the ending point (point B), press ENTER again.
The set points are displayed and the player starts repeating this specific portion.
"A-B" appears on the front panel display during A-B Repeat Play.



To return to normal play
Press CLEAR, or select "OFF" in Step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

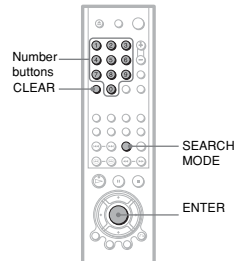
Notes
• When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.
• A-B Repeat Play does not work for titles containing still pictures on a DVD-RW in VR mode.
• A-B Repeat Play does not work across multiple titles on a DVD-RW in VR mode.

Searching for a Scene

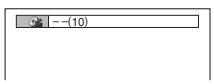
Searching for a Title/ Chapter/Track/Index/ Scene (Search mode) DVD-V

DVD-RW VCD CD DATA CD

You can search a DVD by title or chapter, and you can search a VIDEO CD/CD by track, index, or scene. As titles and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code.



1 Press SEARCH MODE.
The following display appears.
"-- (∗∗)" appears next to the icon (∗∗ refers to a number).
The number in parentheses indicates the total number of titles, tracks, indexes, scenes, etc. of the disc.



2 Press SEARCH MODE repeatedly to select the search method.

◆ **When playing a DVD VIDEO/DVD-RW**
TITLE
CHAPTER
TIME/TEXT
Select "TIME/TEXT" to search for a starting point by inputting the time code.

◆ **When playing a VIDEO CD**
TRACK
INDEX

◆ **When playing a VIDEO CD with PBC Playback**
SCENE

◆ **When playing a CD**
TRACK
INDEX

◆ **When playing a DATA CD (MP3 audio)**
ALBUM
TRACK

3 Select the number of the title, track, scene, time code, etc. you want by pressing the number buttons to select the digit.
For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, select "TIME/TEXT" in Step 2 and enter "2:10:20."

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

4 Press ENTER.
The player starts playback from the selected number.

To turn off the display
Press SEARCH MODE repeatedly until the display is turned off.

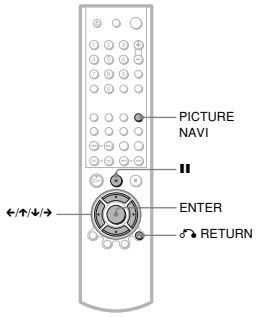
Hints
• You can display the first scene of titles, chapters or tracks recorded on the disc on a screen divided into 9 sections. You can start playback directly by selecting one of the scenes. For details, see page 42.
• You can also select "TITLE," "CHAPTER," "TRACK," "INDEX," "SCENE," "TIME/TEXT," or "ALBUM" from the Control Menu (page 12).

Note

You cannot search for a still picture on a DVD-RW in VR mode.

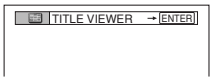
Searching by Scene (PICTURE NAVIGATION)

You can divide the screen into 9 subscreens and find the desired scene quickly.



1 Press PICTURE NAVI during playback.

The following display appears.



2 Press PICTURE NAVI repeatedly to select the item.

Refer to the explanations given for each item in the following sections.

- TITLE VIEWER (for DVD VIDEO only)
- CHAPTER VIEWER (for DVD VIDEO only)
- TRACK VIEWER (for VIDEO CD only)
- STROBE PLAYBACK
- ANGLE VIEWER (for DVD VIDEO only)

3 Press ENTER.

To return to normal play

Press RETURN.

Hint

You can also select "PICTURE NAVIGATION" from the Control Menu (page 12).

Notes

- Depending on the disc, you may not be able to select all functions.
- The sound is muted when using this function.

Scanning the title, chapter, or track (TITLE VIEWER, CHAPTER VIEWER, TRACK VIEWER)

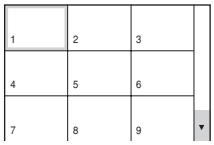
DVD-V VCD

You can divide the screen into 9 subscreens and display the first scene of titles, chapters, or tracks.

You can also play back from the selected title, chapter, or track. After performing Step 3 of "Searching by Scene (PICTURE NAVIGATION)" above, select the scene using ←/↑/↓/→ and press ENTER.

Hint

If there are more than 9 titles, chapters, or tracks, ▼ is displayed at the bottom right.
To display the additional titles, chapters, or tracks, select the bottom right scene (the position 9) and press ↓. To return to the previous scene, select the top left scene (the position 1) and press ↑.



Dividing a scene into 9 sections (STROBE PLAYBACK)

DVD-V VCD

You can display 9 consecutive moving pictures on the screen.

When you press ❚❚ after performing Step 3 of "Searching by Scene (PICTURE NAVIGATION)" above, the moving pictures pause.

Displaying different angles simultaneously (ANGLE VIEWER)

DVD-V

If various angles (multi-angles) for a scene are recorded on the DVD VIDEO, you can display all of the angles recorded on the disc on the screen divided into 9 sections.

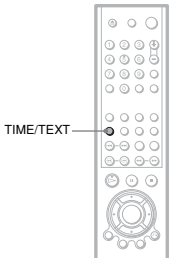
You can also play back from the selected angle. After performing Step 3 of "Searching by Scene (PICTURE NAVIGATION)" above, select the angle using ←/↑/↓/→ and press ENTER.

Viewing Information About the Disc

Checking the Playing Time and Remaining Time

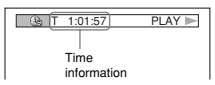
DVD-V DVD-RW VCD CD DATA CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/CD text or track name (MP3 audio) recorded on the disc.



1 Press TIME/TEXT during playback.

The following display appears.



2 Press TIME/TEXT repeatedly to change the time information.

The display and the kinds of time that you can change depend on the disc you are playing.

◆ When playing a DVD VIDEO or DVD-RW

- T **:**:** Playing time of the current title
- T–**:**:** Remaining time of the current title
- C **:**:** Playing time of the current chapter
- C–**:**:** Remaining time of the current chapter

◆ When playing a VIDEO CD (with PBC functions)

- **:** Playing time of the current scene

◆ When playing a VIDEO CD (without PBC functions) or CD

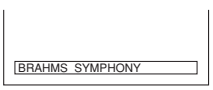
- T **:** Playing time of the current track
- T–**:** Remaining time of the current track
- D **:** Playing time of the current disc
- D–**:** Remaining time of the current disc

◆ When playing a DATA CD (MP3 audio)

- ***:** Playing time of the current track

To check the DVD/CD text or track and album names (MP3 audio)

Press TIME/TEXT repeatedly in Step 2 to display text recorded on the DVD VIDEO/CD/DATA CD.
The DVD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, "NO TEXT" appears.

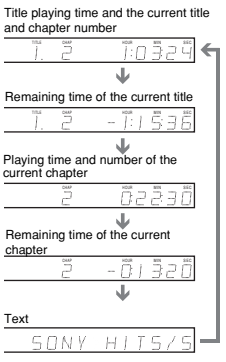


For DATA CDs, the track and album names of the MP3 audio track appears (page 47).

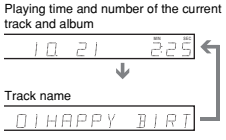
Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you change the time information on your TV screen.

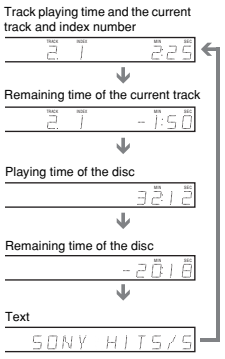
When playing a DVD VIDEO or DVD-RW


Title playing time and the current title and chapter number
Remaining time of the current title
Playing time and number of the current chapter
Remaining time of the current chapter
Text

When playing a DATA CD (MP3 audio)



When playing a VIDEO CD (without PBC functions) or CD


Track playing time and the current track and index number
Remaining time of the current track
Playing time of the disc
Remaining time of the disc
Text

Hints

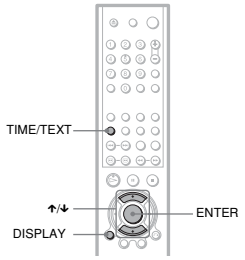
- When playing VIDEO CDs with PBC functions, the scene number and the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text using the Control Menu (page 12).

Notes

- Depending on the type of disc being played, the DVD/CD text or track name may not be displayed.
- The player can only display the first level of the DVD/CD text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.

Checking the Play Information

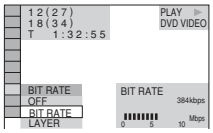
You can check information such as the bit rate or the disc layer that is being played.



Checking the play information of a DVD (ADVANCED) DVD-V DVD-RW

1 Press DISPLAY during playback.
The Control Menu is displayed.

2 Press ↑/↓ to select (ADVANCED), then press ENTER.
The options for "ADVANCED" appear.



3 Press ↑/↓ to select items.
For each item, please refer to "Displays of each item."
- BIT RATE: displays the bit rate.
- LAYER: displays the layer and the pick-up point.

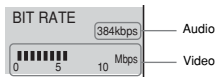
4 Press ENTER.

To close the ADVANCED window
Select "OFF" in Step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

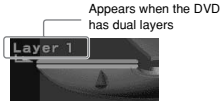
Displays of each item
By pressing DISPLAY repeatedly, you can display either "BIT RATE" or "LAYER," whichever was selected in "ADVANCED."

◆BIT RATE



Bit rate refers to the amount of video/audio data per second in a disc. While playing a disc, an approximate bit rate of the playback picture is displayed as Mbps (Mega bit per second) and the audio as kbps (kilo bit per second). The higher the bit rate, the larger the amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

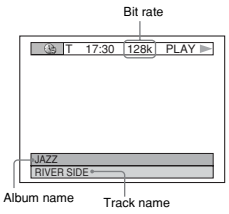
◆LAYER



Indicates the approximate point where the disc is playing.
If it is a dual-layer DVD, the player indicates which layer is being read ("Layer 0" or "Layer 1").
For details on the layers, see page 73 (DVD VIDEO).

Checking the play information of a DATA CD DATA CD

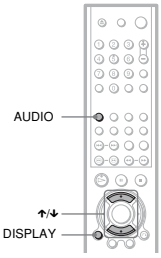
By pressing TIME/TEXT while playing MP3 audio tracks on a DATA CD, you can display the audio bit rate (the amount of data per second of the current audio).



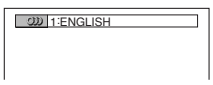
Changing the Sound

DVD-V DVD-RW VCD CD DATA CD

When playing a DVD VIDEO recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can change the audio format. If the DVD VIDEO is recorded with multilingual tracks, you can also change the language.
With CDs, DATA CDs, or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



1 Press AUDIO during playback.
The following display appears.



2 Press AUDIO repeatedly to select the desired audio signal.

◆ When playing a DVD VIDEO
Depending on the DVD VIDEO, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 76 to see which language the code represents.
When the same language is displayed two or more times, the DVD VIDEO is recorded in multiple audio formats.

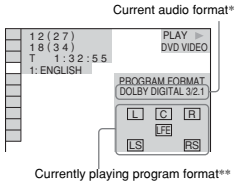
◆ When playing a DVD-RW
The types of sound tracks recorded on a disc are displayed. The default setting is underlined.
Example:
- 1: MAIN (main sound)
- 1: SUB (sub sound)
- 1: MAIN+SUB (main and sub sound)

◆ When playing a VIDEO CD, CD, or DATA CD (MP3 audio)
The default setting is underlined.
- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

Hint
You can also select "AUDIO" from the Control Menu (page 12).

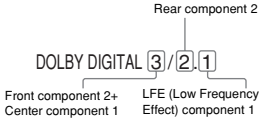
Displaying the audio information of the disc DVD-V

Press DISPLAY during playback to display the Control Menu. Select "AUDIO" using ↑/↓. The channels being played are displayed on the screen.
For example, in Dolby Digital format, multiple signals ranging from monaural to 5.1 channel signals can be recorded on a DVD VIDEO. Depending on the DVD VIDEO, the number of the recorded channels may differ.



*"PCM," "DTS," or "DOLBY DIGITAL" is displayed.
In the case of "DOLBY DIGITAL," the channels in the playing track are displayed by numbers as follows:

For Dolby Digital 5.1 ch:



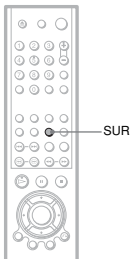
**The letters in the program format display mean the following sound component:
L: Front (left)
R: Front (right)
C: Center
LS: Rear (left)
RS: Rear (right)
S: Rear (monaural): The rear component of the Dolby Surround processed signal and the Dolby Digital signal
LFE: Low Frequency Effect signal

Hint
For Dolby Digital and DTS, "LFE" is always enclosed in a solid line regardless of the LFE signal component being output.

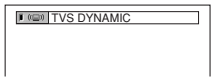
Note
If "DTS" is set to "OFF" in "AUDIO SETUP" (page 69) the DTS track selection option will not appear on the screen even if the disc contains DTS tracks.

TV Virtual Surround Settings (TVS) DVD-V

When you connect a stereo TV or 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. TVS was developed by Sony to produce surround sound for home use using just a stereo TV.
This function is designed to work with the LINE OUT L/R (AUDIO) 1/2 jacks.
Note that if you select one of the TVS settings, the player does not output Dolby Digital signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack. (when you set "DOLBY DIGITAL" in "AUDIO SETUP" to "D-PCM") (page 69)



1 Press SUR during playback.
The following display appears.



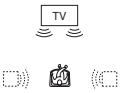
→continued

2 Press SUR repeatedly to select one of the TVS sounds.

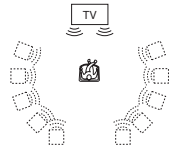
Refer to the following explanations given for each item.
- TVS DYNAMIC
- TVS WIDE
- TVS NIGHT
- TVS STANDARD

To cancel the setting
Select "OFF" in Step 2.

◆TVS DYNAMIC
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below).
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

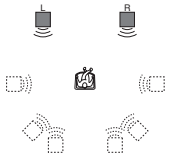


◆TVS WIDE
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



◆TVS NIGHT
Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "TVS WIDE" at low volume.

◆TVS STANDARD
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separate speakers.



L: Front speaker (left)
R: Front speaker (right)
□: Virtual speaker

Hints
- You can select "TVS" by pressing the SURROUND button on the player.
- You can also select "TVS" from the Control Menu (page 12).

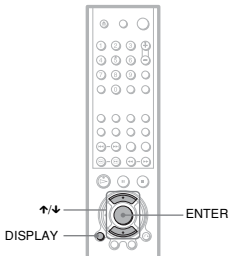
Notes
- When the playing signal does not contain a signal for the rear speakers, the surround effects cannot be heard.
- When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- "TVS NIGHT" only works with Dolby Digital discs. However, not all discs will respond to the "TVS NIGHT" function in the same way.
- If you use the DIGITAL OUT (OPTICAL or COAXIAL) jack and set "DOLBY DIGITAL" to "DOLBY DIGITAL" or "DTS" to "ON" in "AUDIO SETUP," sound will come from your speakers but it will not have the TVS effect.

Note
Depending on the DVD VIDEO, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

Adjusting the Picture Quality (BNR)

DVD-V DVD-RW VCD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.

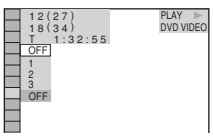


1 Press DISPLAY twice during playback.

The Control Menu appears.

2 Press ↑/↓ to select (BNR), then press ENTER.

The options for "BNR" appear.



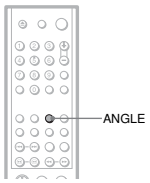
3 Press ↑/↓ to select a level.
- 1: reduces the "block noise."
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

Enjoying Movies

Changing the Angles

DVD-V

If various angles (multi-angles) for a scene are recorded on the DVD VIDEO, "ANGLE" appears in the front panel display. This means that you can change the viewing angle.



1 Press ANGLE during playback.

The number of the angle appears on the display.

2 Press ANGLE repeatedly to select the angle number.

The scene changes to the selected angle.

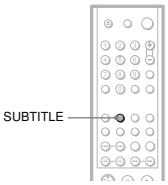
Hints
- You can display all the angles recorded on the disc on the same screen, and start playback directly from the chosen angle. The angles are displayed on a screen divided into 9 sections (page 42).
- You can also select "ANGLE" from the Control Menu (page 12).

Note
Depending on the DVD VIDEO, you may not be able to change the angles even if multi-angles are recorded on the DVD VIDEO.

Displaying the Subtitles

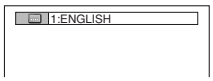
DVD-V DVD-RW

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



1 Press SUBTITLE during playback.

The following display appears.



2 Press SUBTITLE repeatedly to select the setting.

◆ When playing a DVD VIDEO
Select the language.
Depending on the DVD VIDEO, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 76 to see which language the code represents.

◆ When playing a DVD-RW
Select "ON."

To turn off the subtitles
Select "OFF" in Step 2.

Hint
You can also select "SUBTITLE" from the Control Menu (page 12).

→continued

4 Press ENTER.

The disc plays with the setting you selected.

To cancel the "BNR" setting
Select "OFF" in Step 3.

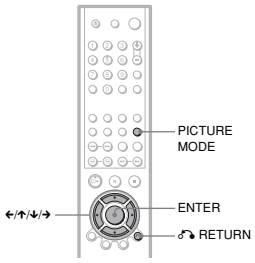
To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Notes
- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, the "BNR" effect may be hard to discern.

Adjusting the Playback Picture (CUSTOM PICTURE MODE)

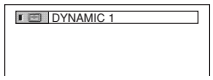
DVD-V DVD-RW VCD

You can adjust the video signal of the DVD or VIDEO CD from the player to obtain the picture quality you want. Choose the setting that best suits the program you are watching. When you select "MEMORY," you can make further adjustments to each element of the picture (color, brightness, etc.).



1 Press PICTURE MODE during playback.

The following display appears.



2 Press PICTURE MODE repeatedly to select the setting you want.

The default setting is underlined.
- STANDARD: displays a standard picture.
- DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
- DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the color intensity.

→continued

- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: White colors become brighter and black colors become richer, and the color contrast is increased.
- MEMORY: adjusts the picture in greater detail.

Hints
- When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.
- The picture can be adjusted by pressing the PICTURE MODE button on the player as well.
- You can also select "CUSTOM PICTURE MODE" from the Control Menu (page 12).

Adjusting the picture items in "MEMORY"

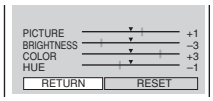
You can adjust each element of the picture individually.
- PICTURE: changes the contrast
- BRIGHTNESS: changes the overall brightness
- COLOR: makes the colors deeper or lighter
- HUE: changes the color balance

1 Press PICTURE MODE repeatedly to select "MEMORY" and press ENTER.
The "PICTURE" adjustment bar appears.

2 Press ←/→ to adjust the picture contrast, then press ENTER.
The adjustment is saved, and "BRIGHTNESS" adjustment bar appears.

3 Repeat Step 2 to adjust "BRIGHTNESS," "COLOR," and "HUE."

The Custom Picture Mode display appears. You can check each adjustment.

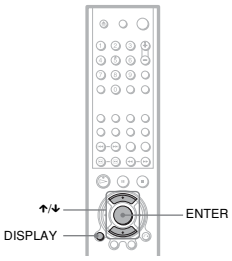


To turn off the display
Press ↶ RETURN , or select "RETURN" in Step 3 and press ENTER.

Hints
- To reset the picture items to the default values, press → after Step 3 to select "RESET" and press ENTER.
- When "PLAYBACK MEMORY" in "CUSTOM SETUP" is set to "ON" the player will save a single setting for up to 40 individual discs. (This does not apply to DVD-RWs in VR mode.)
- If you do not want to save the adjustment in Step 2, you can go to the next picture item by pressing ↑/↓ without saving.

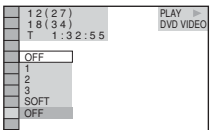
Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) DVD-V DVD-RW VCD

The Digital Video Enhancer (DVE) function makes the picture appear clear and crisp by enhancing the outlines of images on your TV screen. Also, this function can soften the images on the screen.



1 Press DISPLAY twice during playback.
The Control Menu appears.

2 Press ↑/↓ to select (DIGITAL VIDEO ENHANCER), then press ENTER.
The options for "DIGITAL VIDEO ENHANCER" appear.



3 Press ↑/↓ to select a level.
- 1: enhances the outline.
- 2: enhances the outline more than 1.
- 3: enhances the outline more than 2.
- SOFT: softens the image (DVD VIDEO/DVD-RW only).

4 Press ENTER.
The disc plays with the setting you selected.

To cancel the "DIGITAL VIDEO ENHANCER" setting
Select "OFF" in Step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Note
Depending on the disc or the scene being played, noise found in the disc may become more apparent. If this happens, it is recommended that you use the BNR function (page 52) with the DVE function. If the condition still does not improve, reduce the Digital Video Enhancer level, or select "SOFT" (DVD VIDEO/DVD-RW only) in Step 3 above.

Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL)

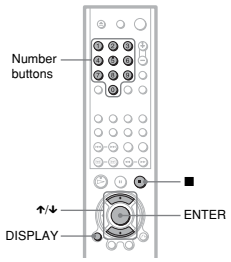
You can set two kinds of playback restrictions for the desired disc.
- Custom Parental Control
  You can set playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes.

The same password is used for both Parental Control and Custom Parental Control.

Custom Parental Control

DVD-V VCD CD

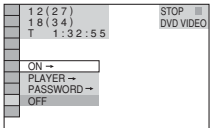
You can set the same Custom Parental Control password for up to 40 discs. When you set the 41st-disc, the first disc is canceled.



1 Insert the disc you want to lock.
If the disc is playing, press ■ to stop playback.

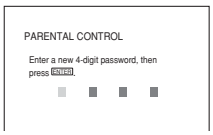
2 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

3 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.



4 Press ↑/↓ to select "ON →," then press ENTER.

◆ If you have not entered a password
The display for registering a new password appears.



Enter a 4-digit password using the number buttons, then press ENTER. The display for confirming the password appears.

◆ When you have already registered a password
The display for entering the password appears.

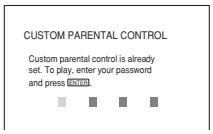
5 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.
"Custom parental control is set." appears and then the screen returns to the Control Menu.

To turn off the Custom Parental Control function

1 Follow Steps 1 through 3 of "Custom Parental Control."
2 Press ↑/↓ to select "OFF →," then press ENTER.
3 Enter your 4-digit password using the number buttons, then press ENTER.

To play a disc for which Custom Parental Control is set

1 Insert the disc for which Custom Parental Control is set.
The "CUSTOM PARENTAL CONTROL" display appears.

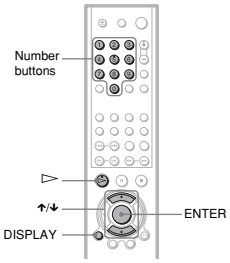


2 Enter your 4-digit password using the number buttons, then press ENTER.
The player is ready for playback.

Hint
If you forget your password, enter the 6-digit number "199703" using the number buttons when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

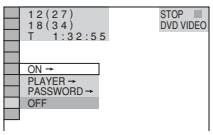
Parental Control (limited playback) DVD-V

Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.



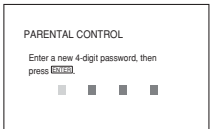
1 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.



3 Press ↑/↓ to select "PLAYER →," then press ENTER.

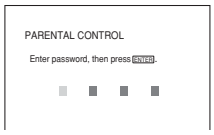
◆ If you have not entered a password
The display for registering a new password appears.



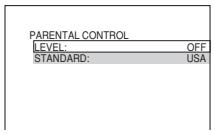
Enter a 4-digit password using the number buttons, then press ENTER. The display for confirming the password appears.

→continued

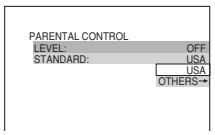
◆ When you have already registered a password
The display for entering the password appears.



4 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.
The display for setting the playback limitation level appears.

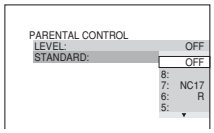


5 Press ↑/↓ to select "STANDARD," then press ENTER.
The selection items for "STANDARD" are displayed.

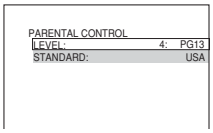


6 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.
The area is selected.
When you select "OTHERS →," select and enter a standard code in the table on page 59 using the number buttons.

7 Press ↑/↓ to select "LEVEL," then press ENTER.
The selection items for "LEVEL" are displayed.



8 Select the level you want using ↑/↓, then press ENTER.
Parental Control setting is complete.



The lower the value, the stricter the limitation.

To turn off the Parental Control function
Set "LEVEL" to "OFF" in Step 8.

To play a disc for which Parental Control is set
1 Insert the disc and press ▷.
The display for entering your password appears.

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

Hint
If you forget your password, remove the disc and repeat Steps 1 to 3 of "Parental Control (limited playback)." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password, replace the disc in the player and press ▷. When the display for entering your password appears, enter your new password.

Notes
- When you play discs which do not have the Parental Control function, playback cannot be limited on this player.
- Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is canceled, the level returns to the original level.

Area Code

Standard	Code number
Argentina	2044
Australia	2047
Austria	2046
Belgium	2057
Brazil	2070
Canada	2079
Chile	2090
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
India	2248
Indonesia	2238
Italy	2254
Japan	2276
Korea	2304
Malaysia	2363
Mexico	2362
Netherlands	2376
New Zealand	2390
Norway	2379
Pakistan	2427
Philippines	2424
Portugal	2436
Russia	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Thailand	2528
United Kingdom	2184

Changing the password
1 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.

3 Press ↑/↓ to select "PASSWORD →," then press ENTER.
The display for entering the password appears.

4 Enter your 4-digit password using the number buttons, then press ENTER.

5 Enter a new 4-digit password using the number buttons, then press ENTER.

6 To confirm your password, re-enter it using the number buttons, then press ENTER.

If you make a mistake entering your password
Press ← before you press ENTER and input the correct number.

If you make a mistake
Press ↩ RETURN.

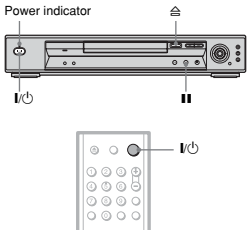
To turn off the display
Press DISPLAY repeatedly until the display is turned off.

Operation Sound Effects
(Sound Feedback)

The player beeps when the following operations are performed.
The default setting of the Sound Feedback function is set to off.

Operation	Operation sound
Power is turned on	One beep
Power is turned off	Two beeps
▷ is pressed	One beep
❚❚ is pressed	Two beeps
Playback is stopped	One long beep
Operation is not possible	Three beeps

Setting Sound Feedback



1 Press I/⏻ on the player or the remote.
The power indicator lights up in green. When there is a disc in the player, press ⏏ and remove the disc. Then press ⏏ again to close the disc tray.

2 Press and hold ❚❚ on the player for more than two seconds.
You will hear one beep and the Sound Feedback function is turned on.

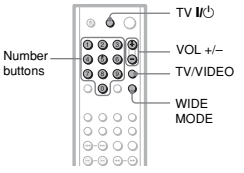
To turn off the Sound Feedback function
When there is no disc in the player, press and hold ❚❚ on the player for more than two seconds. You will hear two beeps and the Sound Feedback function is turned off.

Controlling Your TV or AV Amplifier (Receiver) with the Supplied Remote

By adjusting the remote signal, you can control your TV with the supplied remote. If you connect the player with an AV amplifier (receiver), you can control the volume with the supplied remote.

Notes
- Depending on the unit being connected, you may not be able to control your TV or AV amplifier (receiver) using some of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number you have set may be reset to the default setting. Set the appropriate code number again.

Controlling TVs with the remote



1 Hold down TV I/⏻, and enter your TV's manufacturer's code (see "Code numbers of controllable TVs" below) using the number buttons.

2 Release TV I/⏻.
The remote is set to perform the following:

TV I/⏻	Turns the TV on or off
VOL +/–*	Adjusts the volume of the TV
WIDE MODE	Switches to or from the wide mode of a SONY's wide TV
TV/VIDEO	Switches the TV's input source between the TV and other input sources

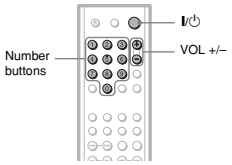
* Once you set a code number for your AV amplifier (receiver), the VOL +/– buttons on the remote control the AV amplifier's volume only. If you would rather control the TV's volume, set the code number to "90" (default) to control the TV's volume again (page 62).

Code numbers of controllable TVs
If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony (default)	01
Akai	04
AOC	04
Centurion	12
Coronado	03
Curtis-Mathes	12
Daytron	12
Emerson	03,04, 14
Fisher	11
General Electric	06,10
Gold Star	03,04, 17
Hitachi	02,03
J.C.Penney	04,12
JVC	09
KMC	03
Magnavox	03,08, 12
Marantz	04,13
MGA/ Mitsubishi	04,12, 13,17
NEC	04,12
Panasonic	06,19
Philco	03,04
Philips	08,21
Pioneer	16
Portland	03
Proscan	10
Quasar	06,18
Radio Shack	05,14
RCA	04,10
Sampo	12
Samsung	03,12, 20
Sanyo	11,14
Scott	12
Sears	07,10, 11
Sharp	03,05, 18
Sylvania	08,12
Teknika	03,08, 14
Toshiba	07
Wards	03,04, 12
Yorx	12
Zenith	15

→continued

Controlling the volume of your AV amplifier (receiver) with the remote



1 Hold down I/⏻, and enter your AV amplifier (receiver)'s manufacturer's code (see the table below) using the number buttons.

2 Release I/⏻.
You can control the volume of the AV amplifier (receiver) using VOL +/–.

Code numbers of controllable AV amplifiers (receivers)

If more than one code number is listed, try entering them one at a time until you find the one that works with your AV amplifier (receiver).

Manufacturer	Code number
Sony	80, 88, 89, 91
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

If you would rather control the volume of your TV

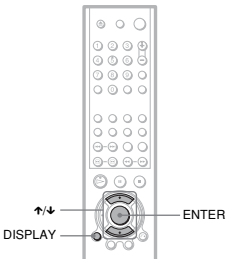
Repeat Steps 1 and 2 above and enter the code number 90 (default).

Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 64 to 69.

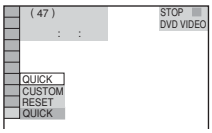
Note

Playback settings stored in the disc take priority over the Setup Display settings and not all the functions described may work.

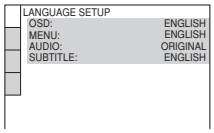


1 Press DISPLAY when the player is in stop mode.
The Control Menu appears.

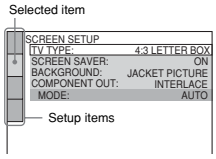
2 Press ↑/↓ to select (SETUP), then press ENTER.
The options for "SETUP" appear.



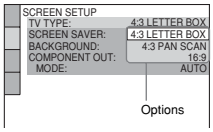
3 Press ↑/↓ to select "CUSTOM," then press ENTER.
The Setup Display appears.



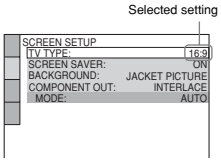
4 Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.
The Setup item is selected.
Example: "SCREEN SETUP"



5 Select an item using ↑/↓, then press ENTER.
The options for the selected item appear.
Example: "TV TYPE"



6 Select a setting using ↑/↓, then press ENTER.
The setting is selected and setup is complete.
Example: "16:9"



To turn off the display

Press DISPLAY repeatedly until the display is turned off.

To enter the Quick Setup mode

Select "QUICK" in Step 3. Follow from Step 5 of the Quick Setup explanation to make basic adjustments (page 25).

To reset all of the "SETUP" settings

1 Select "RESET" in Step 3 and press ENTER.

2 Select "YES" using ↑/↓.
You can also quit the process and return to the Control Menu by selecting "NO" here.

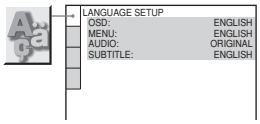
3 Press ENTER.
All the settings explained on pages 64 to 69 return to the default settings. Do not press I/⏻ while resetting the player as it takes a few seconds to complete.

Setting the Display or Sound Track Language

(LANGUAGE SETUP)

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 63).



◆ OSD (On-Screen Display)
Switches the display language on the screen.

◆ MENU (DVD VIDEO only)
You can select the desired language for the disc's menu.

◆ AUDIO (DVD VIDEO only)
Switches the language of the sound track. When you select "ORIGINAL," the language given priority in the disc is selected.

◆ SUBTITLE (DVD VIDEO only)
Switches the language of the subtitle recorded on the DVD VIDEO.
When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Hint
If you select "OTHERS →" in "MENU," "SUBTITLE," and "AUDIO," select and enter a language code from "Language Code List" on page 76 using the number buttons.

Note

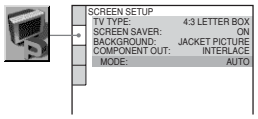
When you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on the DVD VIDEO, one of the recorded languages will be automatically selected.

Settings for the Display

(SCREEN SETUP)

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 63).
The default settings are underlined.



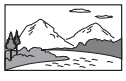
◆ TV TYPE
Selects the aspect ratio of the connected TV (4:3 standard or wide).

4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

4:3 LETTER BOX

4:3 PAN SCAN

16:9



Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

◆ SCREEN SAVER
The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

◆ BACKGROUND
Selects the background color or picture on the TV screen in stop mode or while playing a CD or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background color is blue.
BLACK	The background color is black.

◆ COMPONENT OUT
This will change the type of signal output from the COMPONENT VIDEO OUT jacks on the player. See page 73 for more information about the different types.

INTERLACE	Select this when you are connected to a standard (interlace format) TV.
PROGRESSIVE	Select this when you have a TV that can accept progressive signals.

Hint
When the player outputs progressive signals, the PROGRESSIVE indicator lights up.

Note
If you select "PROGRESSIVE" when you connect the player to a TV that cannot accept the signal in progressive format (480p), the image quality will deteriorate. In this case, set the COMPONENT VIDEO OUT/SCAN SELECT switch on the back panel of the player to INTERLACE. Then set "COMPONENT OUT" to "INTERLACE" when you can see the TV screen correctly, and reset the COMPONENT VIDEO OUT/SCAN SELECT switch to SELECTABLE.

When "PROGRESSIVE" is selected in "COMPONENT OUT"

You can fine-tune the Progressive (480p) video signal output when you select "PROGRESSIVE" in "COMPONENT OUT" of the "SCREEN SETUP" display and connect the player to the TV that is able to accept the video signal in progressive format (480p).

◆ MODE (Conversion Modes)
DVD software can be divided into two types: film based software and video based software. Video based software is derived from TV, such as dramas and sit-coms, and displays images at 30 frames/60 fields per second. Film based software is derived from film and displays images at 24 frames per second. Some DVD software contains both Video and Film.
In order for these images to appear natural on your screen when output in PROGRESSIVE mode (60 frames per second), the progressive video signal needs to be converted to match the type of DVD software that you are watching.

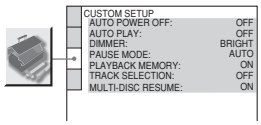
AUTO	This will automatically detect if you are playing Film based or Video based software and convert the signal to the appropriate conversion mode. Normally select this position.
VIDEO	This will set the conversion mode for Video based software, regardless of the type of software that you are playing.

Note
When you play video based software with progressive signals, sections of some types of images may appear unnatural due to the conversion process when output through the COMPONENT VIDEO OUT jacks. Images from the S VIDEO OUT 1/2 and LINE OUT (VIDEO) 1/2 jacks are unaffected as they are output in the interlace format.

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select "CUSTOM SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 63).
The default settings are underlined.



◆ AUTO POWER OFF
Switches the Auto Power Off setting on or off.

OFF	Switches this function off.
ON	The player enters standby mode when left in stop mode for more than 30 minutes.

◆ AUTO PLAY
Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on.

◆ DIMMER
Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.
OFF	Turns off the lighting.

◆ PAUSE MODE (DVD VIDEO/DVD-RW only)
Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

◆ PLAYBACK MEMORY (DVD VIDEO/VIDEO CD only)
The player can store the "SUBTITLE" and other settings of each disc for up to 40 discs (Playback Memory).
Set this function "ON" or "OFF."

ON	Stores the settings in memory when you eject the disc.
OFF	Does not store the settings in memory.

The following settings are stored in memory.
– ANGLE (page 51)*
– AUDIO (page 48)*
– BNR (page 52)
– DIGITAL VIDEO ENHANCER (page 55)
– SUBTITLE (page 51)*
– CUSTOM PICTURE MODE (page 53)
* DVD VIDEO only

Note
The player can store the settings of up to 40 discs. When you store the setting of disc number 41, the first disc setting is canceled.

◆ TRACK SELECTION (DVD VIDEO only)
Gives the sound track which contains the highest number of channels priority when you play a DVD VIDEO on which multiple audio formats (PCM, DTS, or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

◆ DOWNMIX (DVD VIDEO/DVD-RW only)
Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see "Displaying the audio information of the disc" (page 48). This function affects the output of the following jacks:
– LINE OUT L/R (AUDIO) 1/2 jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack when "DOLBY DIGITAL" is set to "D-PCM" (page 69).

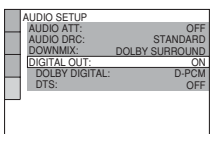
DOLBY SURROUND	Select this when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic).
NORMAL	Select this when the player is connected to an audio component that does not conform to Dolby Surround (Pro Logic).

◆ DIGITAL OUT
Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

ON	Normally select this position. When you select "ON," see "Setting the digital output signal" for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.
For connection details, see page 20.
Select "DOLBY DIGITAL" and "DTS" after setting "DIGITAL OUT" to "ON."



If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

◆ DOLBY DIGITAL (DVD VIDEO/DVD-RW only)
Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP" (page 69).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ DTS (DVD VIDEO only)
Selects whether or not to output DTS signals.

OFF	Select this when the player is connected to an audio component lacking a built-in DTS decoder.
ON	Select this when the player is connected to an audio component with a built-in DTS decoder.

Note
If you select one of the TVS settings while playing a DVD VIDEO, the player does not output Dolby Digital signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack (when you set "DOLBY DIGITAL" in "AUDIO SETUP" to "D-PCM") (page 69).

Notes
- When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 64).
- If you set "DTS" to "OFF" (page 69), the DTS sound track is not played even if you set "TRACK SELECTION" to "AUTO."
- If PCM, DTS, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS, and Dolby Digital sound tracks in this order.

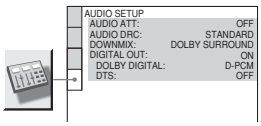
◆ MULTI-DISC RESUME (DVD VIDEO/VIDEO CD only)
Switches the Multi-disc Resume setting on or off. Resume playback point can be stored in memory for up to 40 different DVD VIDEO/VIDEO CD discs (page 31).

ON	Stores the resume settings in memory for up to 40 discs (The settings remain in memory even if you select OFF.)
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

Settings for the Sound (AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 63).
The default settings are underlined.



◆ AUDIO ATT (attenuation)
If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) 1/2 jacks.

OFF	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD VIDEO/DVD-RW only)
Makes the sound clear when the volume is turned down when playing a DVD that conforms to "AUDIO DRC." This affects the output from the following jacks:
– LINE OUT L/R (AUDIO) 1/2 jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 69).

STANDARD	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power is not turned on.

➡ Check that the AC power cord is connected securely.

Picture

There is no picture/picture noise appears.

➡ Re-connect the connecting cord securely.
➡ The connecting cords are damaged.
➡ Check the connection to your TV (page 18) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
➡ The disc is dirty or flawed.
➡ If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S VIDEO input (page 18).
➡ You have set "COMPONENT OUT" in "SCREEN SETUP" to "PROGRESSIVE" even though your TV cannot accept the signal in progressive format. In this case, set the COMPONENT VIDEO OUT/SCAN SELECT switch on the back panel of the player to INTERLACE. Then set "COMPONENT OUT" to "INTERLACE" after you can see the TV screen correctly, and reset the COMPONENT VIDEO OUT/SCAN SELECT switch to SELECTABLE.
➡ Even if your TV is compatible with progressive format (480p) signals, the image may be affected when you set "COMPONENT OUT" to "PROGRESSIVE." In this case, set "COMPONENT OUT" to "INTERLACE."

Even though you set the aspect ratio in "TV TYPE" of "SCREEN SETUP," the picture does not fill the screen.

➡ The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.

➡ Re-connect the connecting cord securely.
➡ The connecting cord is damaged.
➡ The player is connected to the wrong input jack on the amplifier (receiver) (page 22, 23, 24).
➡ The amplifier (receiver) input is not correctly set.
➡ The player is in pause mode or in Slow-motion Play mode.
➡ The player is in fast forward or fast reverse mode.
➡ If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 69).

Sound is noisy.

➡ When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) 1/2 jacks or DIGITAL OUT (OPTICAL or COAXIAL) jack (page 28).

Sound distortion occurs.

➡ Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 68).

The sound volume is low.

➡ The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" to "TV MODE" (page 68).
➡ Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 68).

Operation

The remote does not function.

➡ There are obstacles between the remote and the player.
➡ The distance between the remote and the player is too far.
➡ The remote is not pointed at the remote sensor on the player.
➡ The batteries in the remote are weak.

The disc does not play.

➡ The disc is turned over.
Insert the disc with the playback side facing down on the disc tray.
➡ The disc is skewed.
➡ The player cannot play certain discs (page 6).
➡ The region code on the DVD does not match the player.
➡ Moisture has condensed inside the player (page 3).
➡ The player cannot play DVD-Rs, DVD-RWs, CD-Rs, or CD-RWs that are not finalized (page 6).

The MP3 audio track cannot be played (page 35).

➡ The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/Level 2 or Joliet.
➡ The MP3 audio track does not have the extension ".MP3."
➡ The data is not formatted in MP3 even though it has the extension ".MP3."
➡ The data is not MPEG1 Audio Layer 3 data.
➡ The player cannot play audio tracks in MP3PRO format.

The DVD-RW cannot be played.

➡ The player may not be able to play discs containing recorded images with a copy protection signal (CPRM protection) (page 6).
Images taken from digital broadcasts, etc., contain copy protection signals, such as complete copy protection signals, single copy signals, and restriction-free signals.

The title of the MP3 audio album or track is not correctly displayed.

➡ The player can only display numbers and alphabet. Other characters are displayed as "*."

The disc does not start playing from the beginning.

➡ Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 36).
➡ Resume play has taken effect (page 31).

The player starts playing the disc automatically.

➡ The disc features an auto playback function.
➡ "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 67).

Playback stops automatically.

➡ While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

You cannot perform some functions such as Stop, Search, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play.

➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

The language for the sound track cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the subtitles.

The angles cannot be changed.

➡ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
➡ Multi-angles are not recorded on the DVD being played.

➡continued

➡ The angle can only be changed when the "ANGLE" indicator lights up on the front panel display (page 9).
➡ The DVD prohibits changing of the angles.

The player does not operate properly.

➡ When static electricity, etc., causes the player to operate abnormally, unplug the player.

Nothing is displayed on the front panel display.

➡ "DIMMER" in "CUSTOM SETUP" is set to "OFF." Set "DIMMER" to "BRIGHT" or "DARK" (page 67).

5 numbers or letters are displayed on the screen and on the front panel display.

➡ The self-diagnosis function was activated. (See the table on page 72.)

The disc tray does not open and "LOCKED" appears on the front panel display.

➡ Child Lock is set (page 29).

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.

➡ Contact your Sony dealer or local authorized Sony service facility.

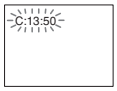
"Data error" appears on the TV screen when playing a DATA CD.

➡ The MP3 audio track you want to play is broken.
➡ The data is not MPEG1 Audio Layer 3 data.

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. ➡Clean the disc with a soft cloth (page 7).
C 31	The disc is not inserted correctly. ➡Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➡Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Chapter (page 9)
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 24, 69)
Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in Dolby Digital cinema audio systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 23)
Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center and rear signals. The rear channel is monaural.

DTS (page 24, 69)
Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio.
Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD VIDEO (page 6)
A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17GB.
The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.
Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

DVD-RW (page 6)
A DVD-RW is a recordable and rewritable disc with the same size as the DVD VIDEO. The DVD-RW can be recorded in two different modes: VR mode and Video mode. VR (Video Recording) mode enables various programming and editing functions, some of which are limited in the case of Video mode. Video mode complies with DVD VIDEO format and can be played on other DVD players while a DVD-RW recorded in VR mode can only be played on DVD-RW compliant players. The "DVD-RW" appearing in this manual, and the on-screen displays refer to DVD-RWs in VR mode.

Film based software, Video based software (page 66)
DVDs can be classified as Film based or Video based software. Film based DVDs contain the same images (24 frames per second) that are shown at movie theaters. Video based DVDs, such as television dramas or sit-coms, displays images at 30 frames (or 60 fields) per second.

Index (CD)/Video Index (VIDEO CD) (page 9)
A number that divides a track into sections to easily locate the point you want on a CD or VIDEO CD. Depending on the disc, no index may be recorded.

➡continued

Interlace format (page 65)
Interlace format shows every other line of an image as a single “field” and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

Progressive format (page 65)
Compared to the Interlace format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interlace format can show 30 frames (60 fields) in one second, the Progressive format can show 60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper. This player is compatible with the 480 progressive format.

Scene (page 9)
On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called “scenes.”

Title (page 9)
The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 9)
Sections of a picture or a music feature on a CD or VIDEO CD (the length of a song).

Language Code List

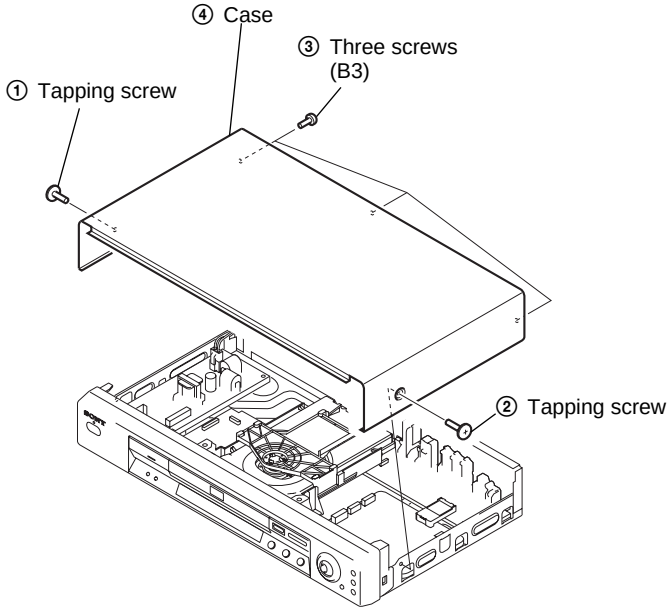
For details, see pages 48, 51, 64.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1183	Irish	1347	Maori	1507	Samoan
1028	Abkhazian	1186	Scots Gaelic	1349	Macedonian	1508	Shona
1032	Afrikaans	1194	Galician	1350	Malayalam	1509	Somali
1039	Amharic	1196	Guarani	1352	Mongolian	1511	Albanian
1044	Arabic	1203	Gujarati	1353	Moldavian	1512	Serbian
1045	Assamese	1209	Hausa	1356	Marathi	1513	Siswati
1051	Aymara	1217	Hindi	1357	Malay	1514	Sesotho
1052	Azerbaijani	1226	Croatian	1358	Maltese	1515	Sundanese
1053	Bashkir	1229	Hungarian	1363	Burmese	1516	Swedish
1057	Byelorussian	1233	Armenian	1365	Nauru	1517	Swahili
1059	Bulgarian	1235	Interlingua	1369	Nepali	1521	Tamil
1060	Bihari	1239	Interlingue	1376	Dutch	1525	Telugu
1061	Bislama	1245	Inupiak	1379	Norwegian	1527	Tajik
1066	Bengali; Bangla	1248	Indonesian	1393	Occitan	1528	Thai
		1253	Icelandic	1403	(Afan)Oromo	1529	Tigrinya
1067	Tibetan	1254	Italian	1408	Oriya	1531	Turkmen
1070	Breton	1257	Hebrew	1417	Punjabi	1532	Tagalog
1079	Catalan	1261	Japanese	1428	Polish	1534	Setswana
1093	Corsican	1269	Yiddish	1435	Pashto; Pushto	1535	Tonga
1097	Czech	1283	Javanese			1538	Turkish
1103	Welsh	1287	Georgian	1436	Portuguese	1539	Tsonga
1105	Danish	1297	Kazakh	1463	Quechua	1540	Tatar
1109	German	1298	Greenlandic	1481	Rhaeto-Romance	1543	Twi
1130	Bhutani	1299	Cambodian			1557	Ukrainian
1142	Greek	1300	Kannada	1482	Kirundi	1564	Urdu
1144	English	1301	Korean	1483	Romanian	1572	Uzbek
1145	Esperanto	1305	Kashmiri	1489	Russian	1581	Vietnamese
1149	Spanish	1307	Kurdish	1491	Kinyarwanda	1587	Volapük
1150	Estonian	1311	Kirghiz	1495	Sanskrit	1613	Wolof
1151	Basque	1313	Latin	1498	Sindhi	1632	Xhosa
1157	Persian	1326	Lingala	1501	Sangho	1665	Yoruba
1165	Finnish	1327	Laothian	1502	Serbo-Croatian	1684	Chinese
1166	Fiji	1332	Lithuanian			1697	Zulu
1171	Faroese	1334	Latvian; Lettish	1503	Singhalese		
1174	French			1505	Slovak		
1181	Frisian	1345	Malagasy	1506	Slovenian	1703	Not specified

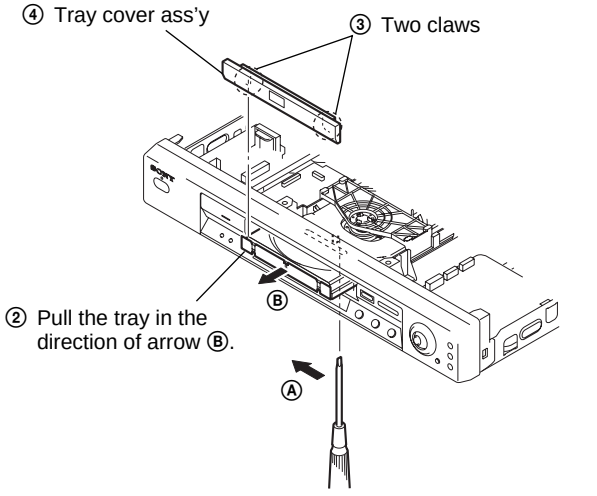
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

2-1. CASE REMOVAL

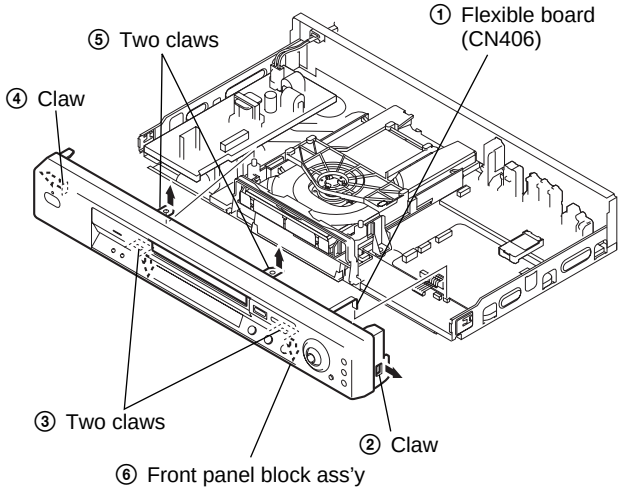


2-2. TRAY COVER ASS'Y REMOVAL

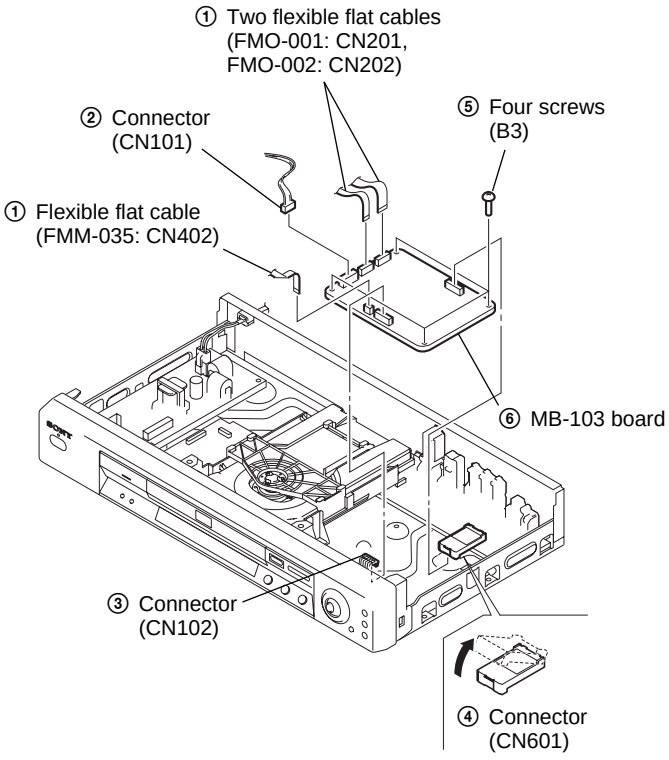


① Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of arrow Ⓐ.

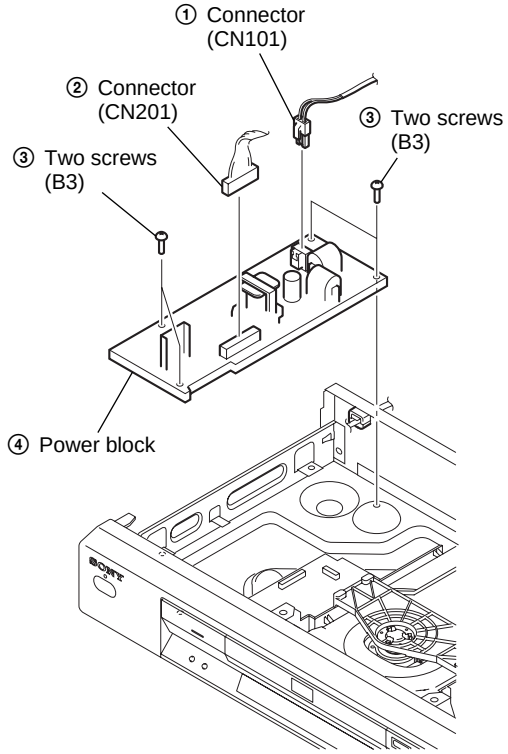
2-3. FRONT PANEL BLOCK ASS'Y REMOVAL



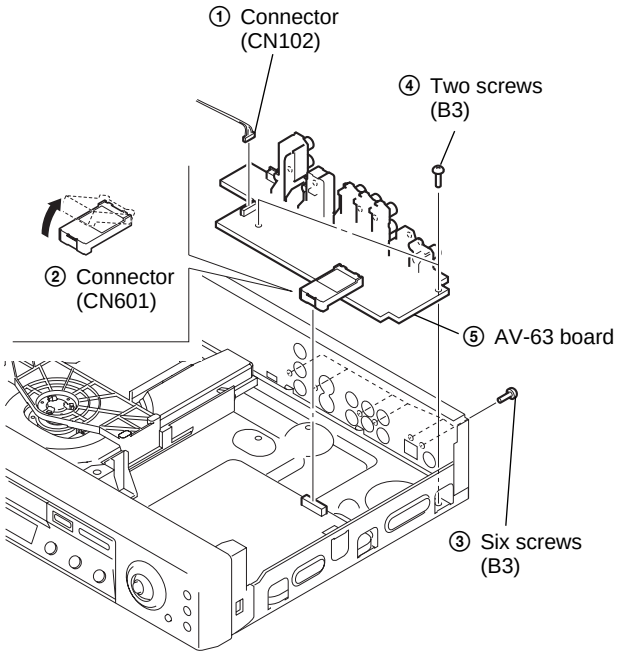
2-4. MB-103 BOARD REMOVAL


① Two flexible flat cables (FMO-001: CN201, FMO-002: CN202)
② Connector (CN101)
⑤ Four screws (B3)
① Flexible flat cable (FMM-035: CN402)
⑥ MB-103 board
③ Connector (CN102)
④ Connector (CN601)

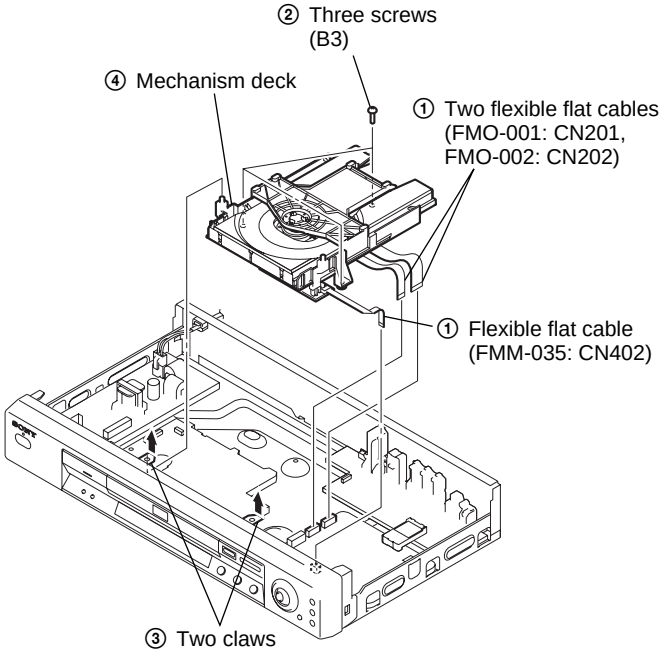
2-5. POWER BLOCK REMOVAL



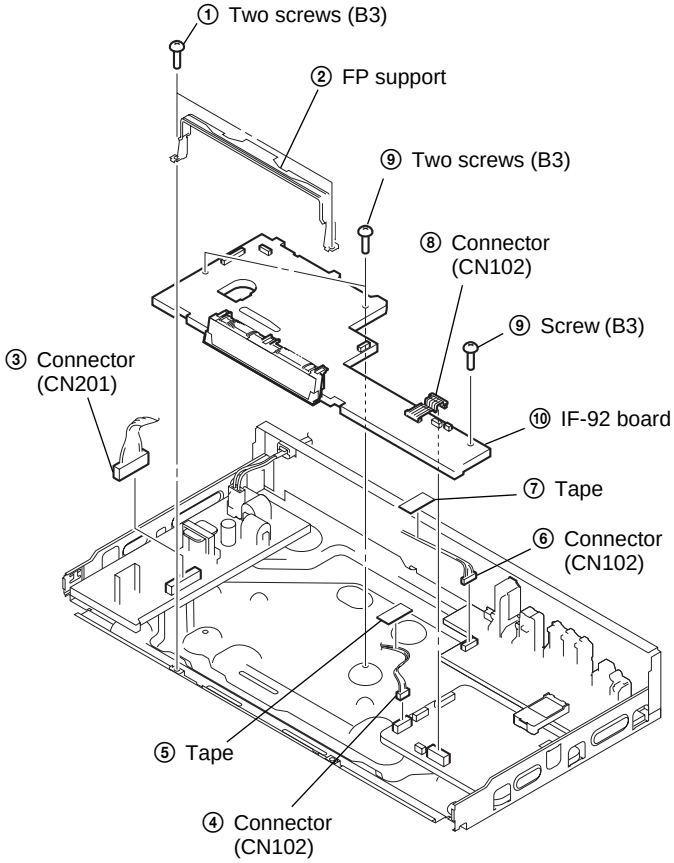
2-6. AV-63 BOARD REMOVAL



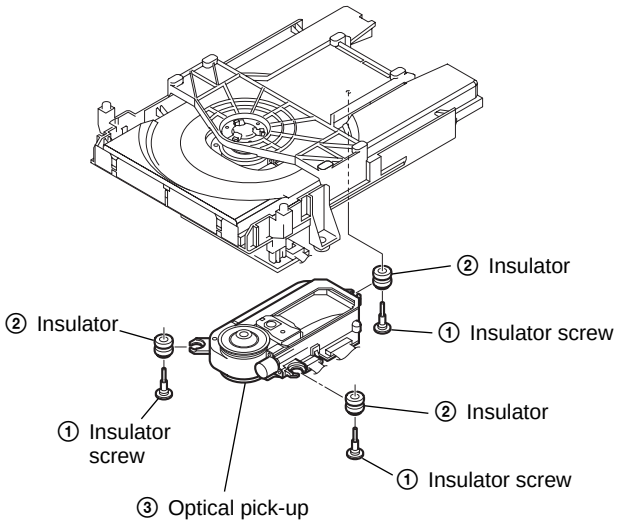
2-7. MECHANISM DECK REMOVAL


② Three screws (B3)
④ Mechanism deck
① Two flexible flat cables (FMO-001: CN201, FMO-002: CN202)
① Flexible flat cable (FMM-035: CN402)
③ Two claws

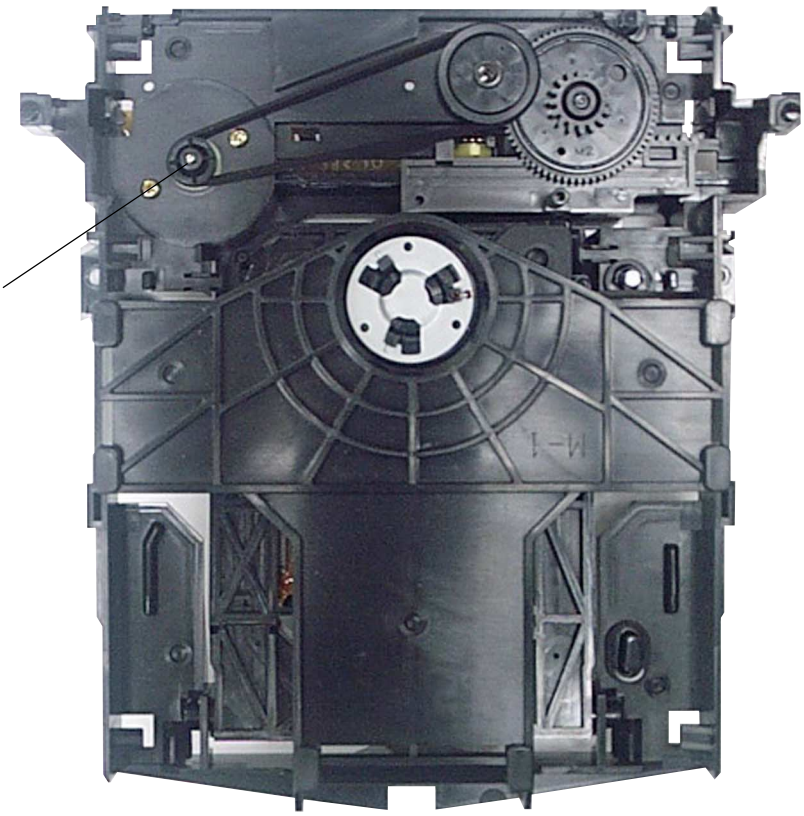
2-8. IF-92 BOARD REMOVAL

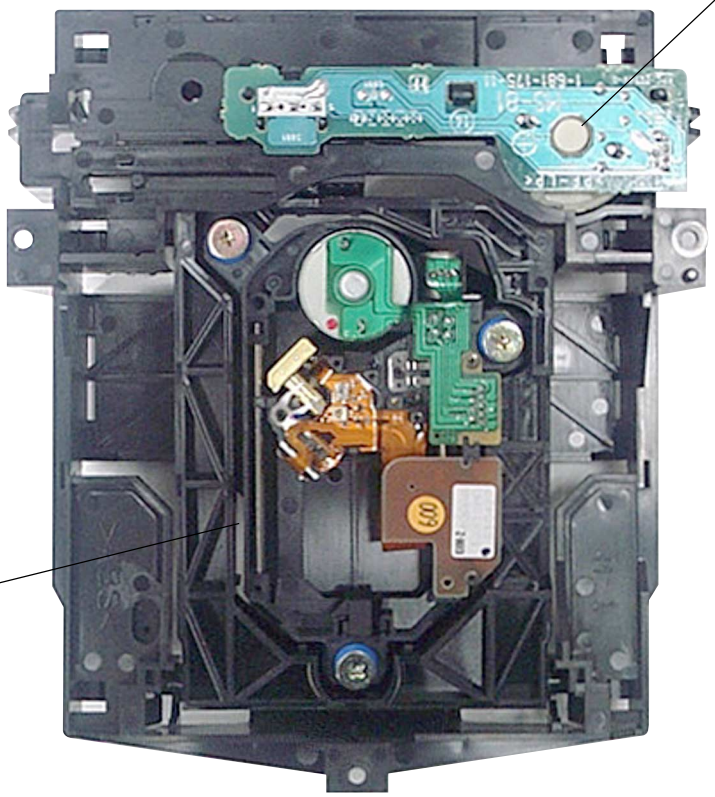


2-9. OPTICAL PICK-UP REMOVAL

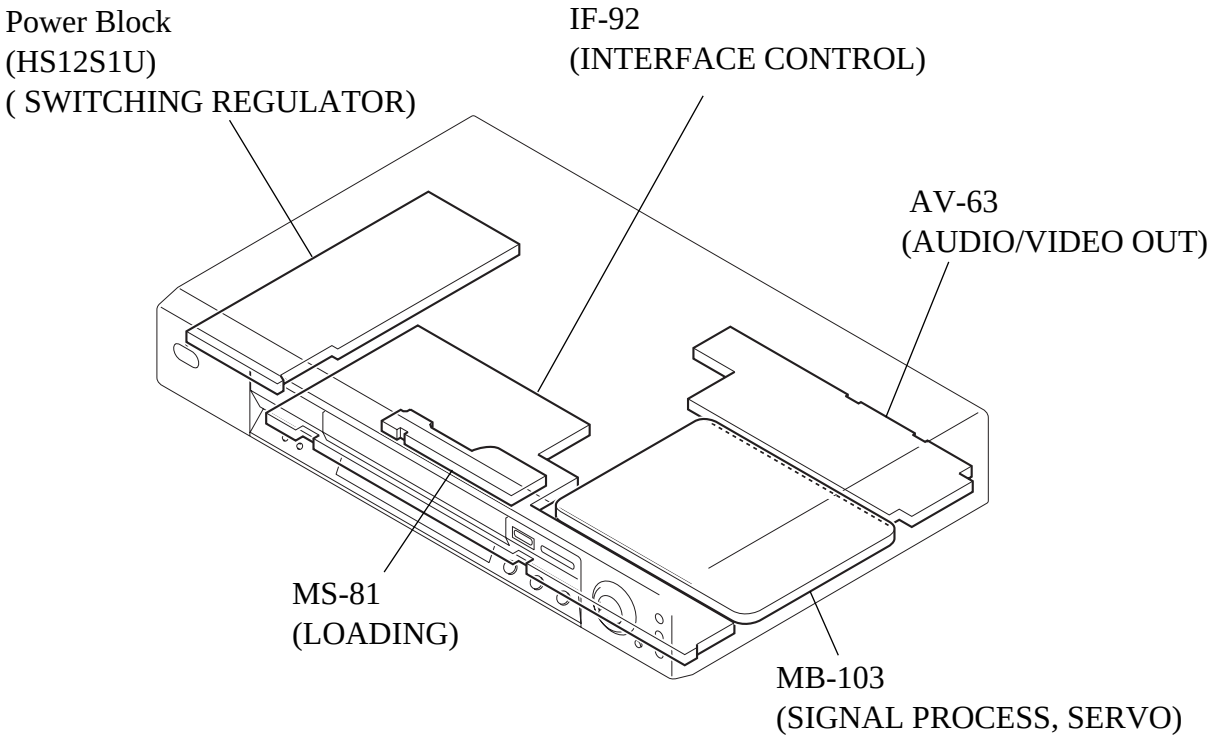


2-10. INTERNAL VIEWS



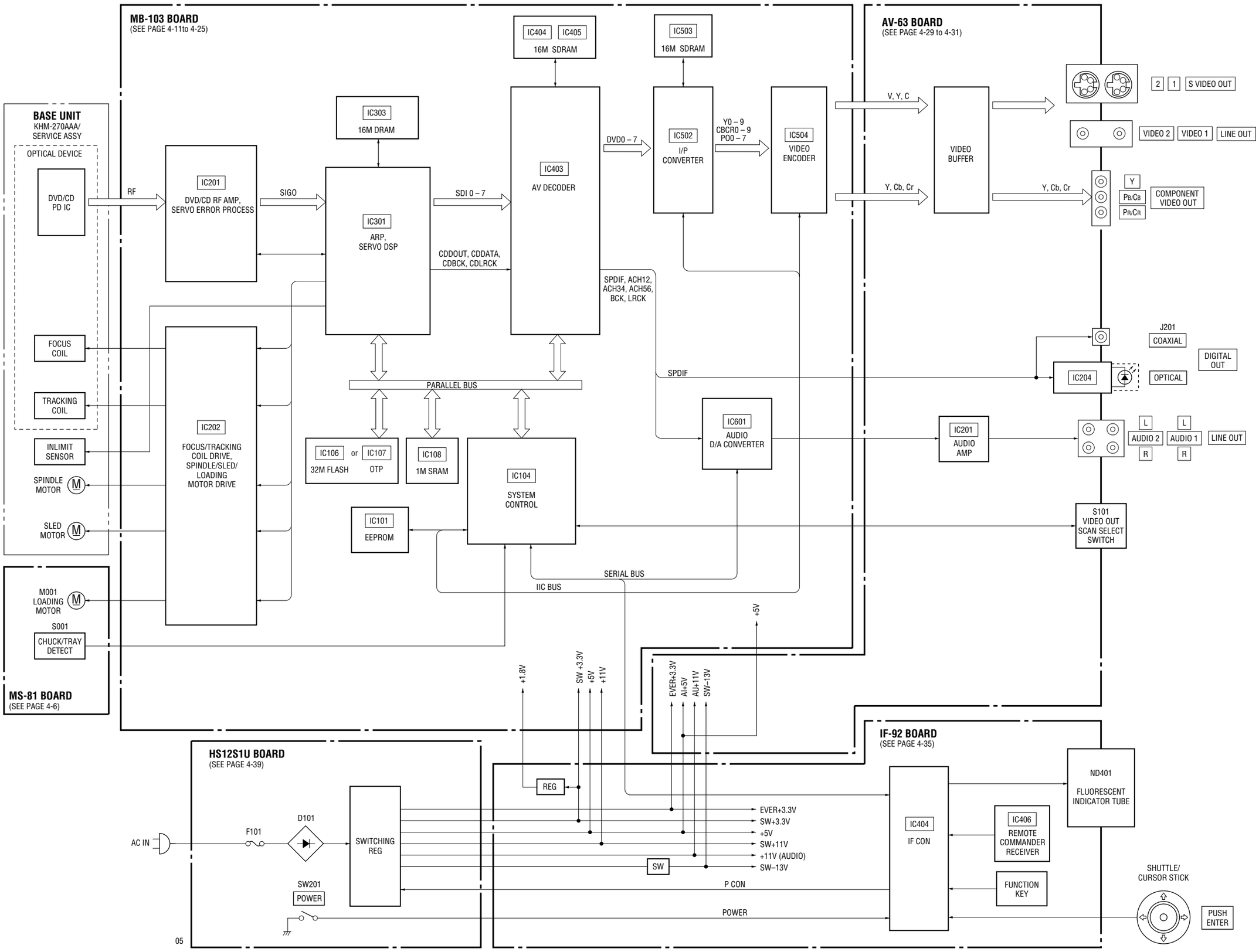


2-11. CIRCUIT BOARDS LOCATION

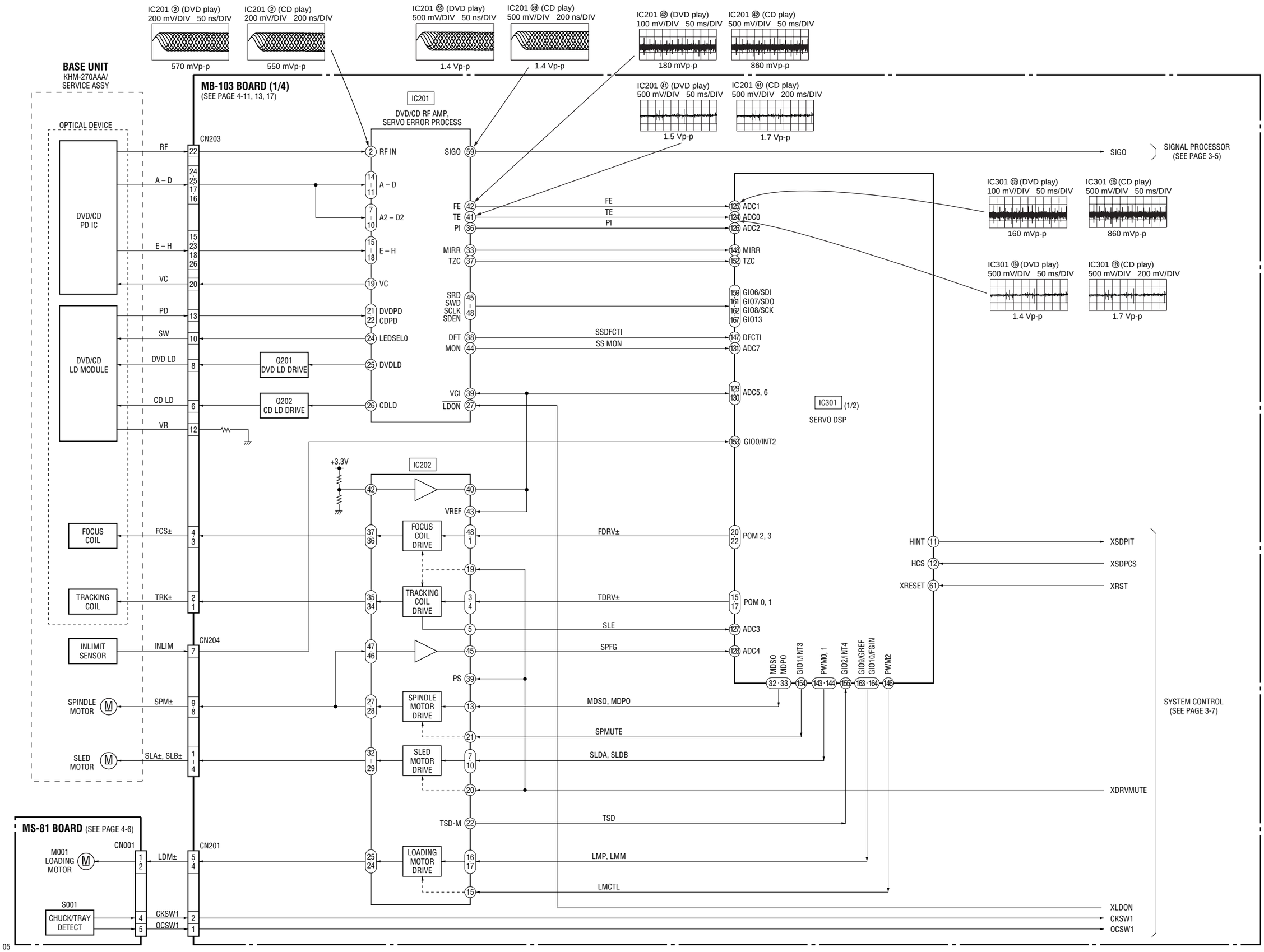


SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

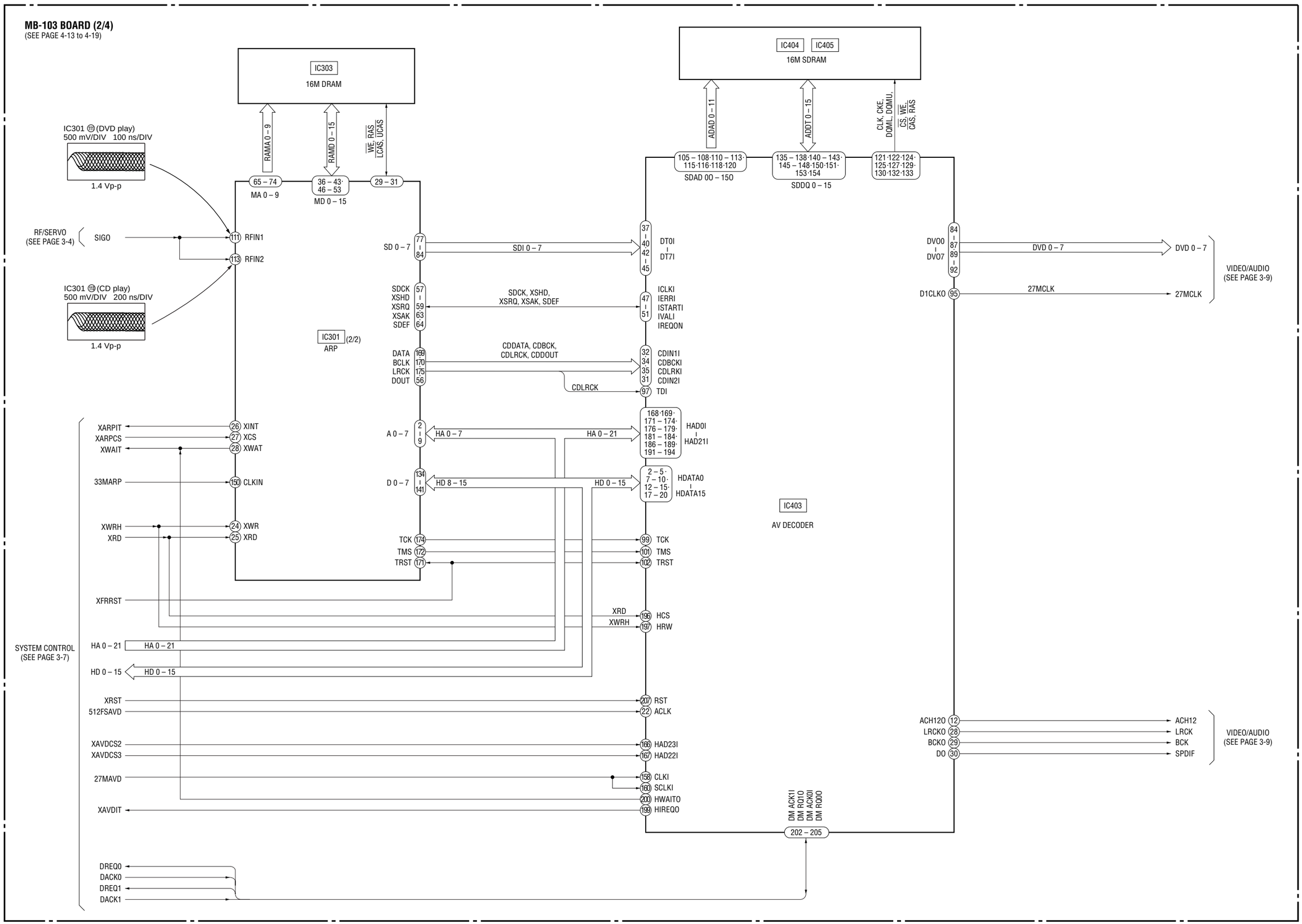


3-2. RF/SERVO BLOCK DIAGRAM

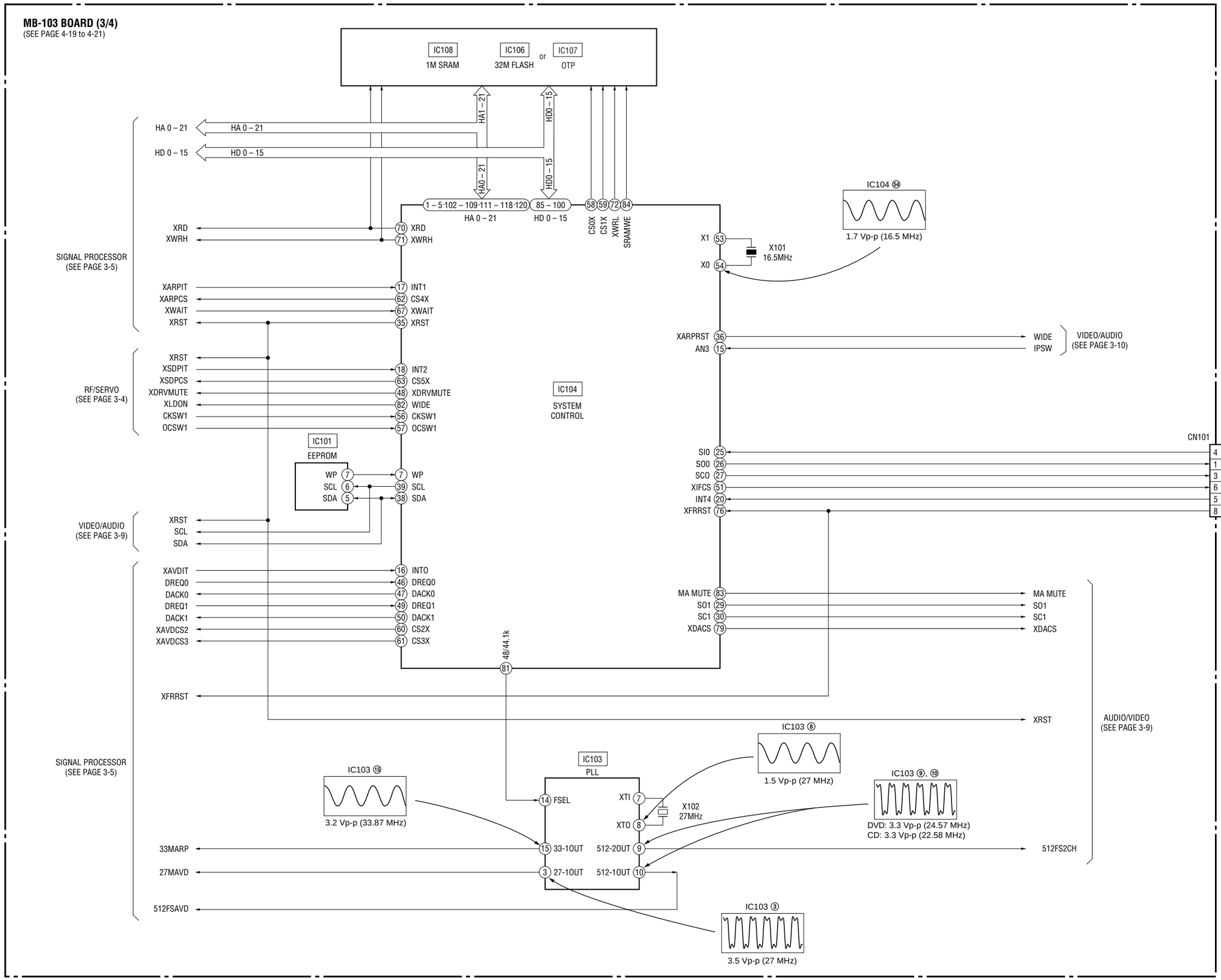


05

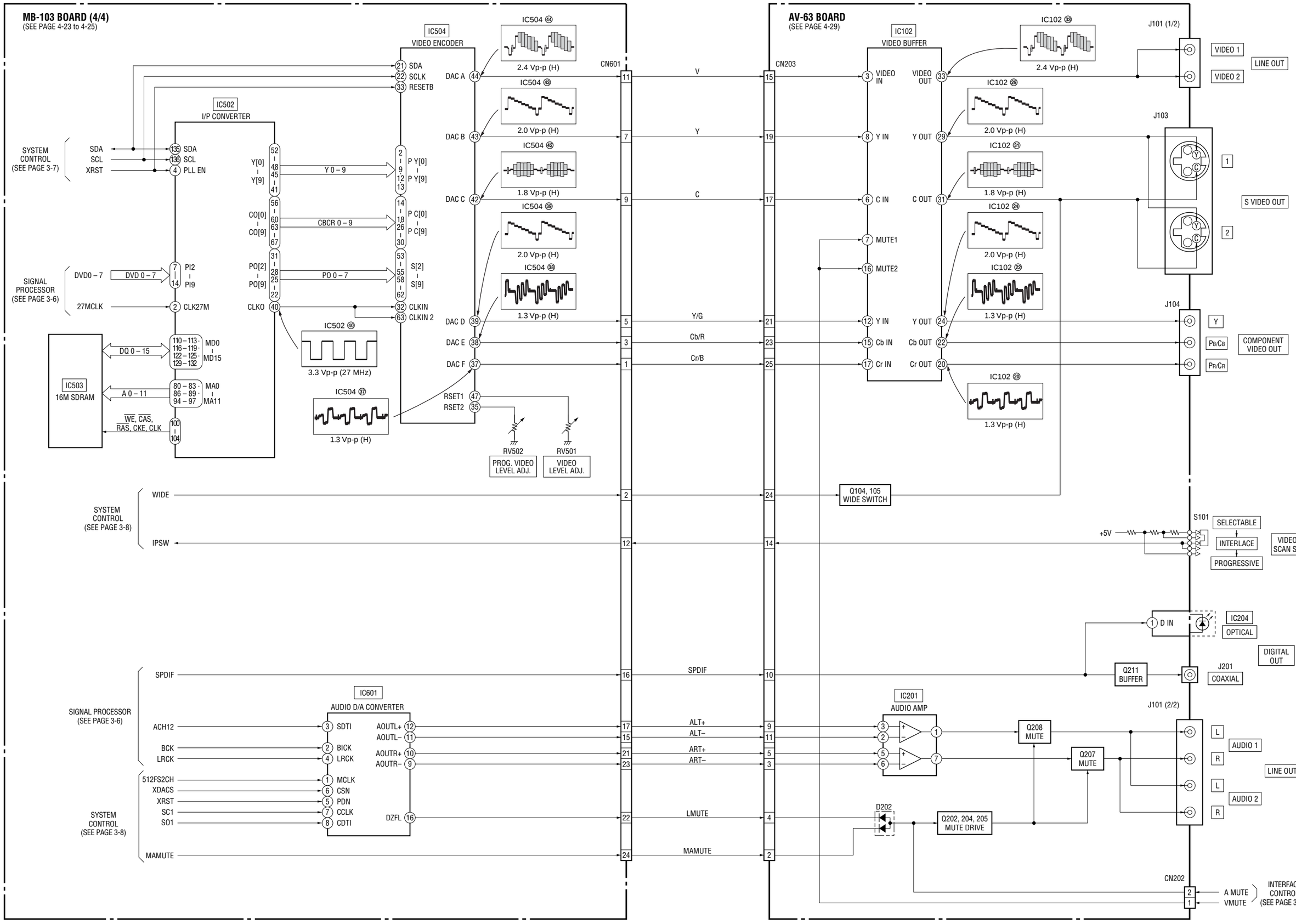
3-3. SIGNAL PROCESSOR BLOCK DIAGRAM



3-4. SYSTEM CONTROL BLOCK DIAGRAM

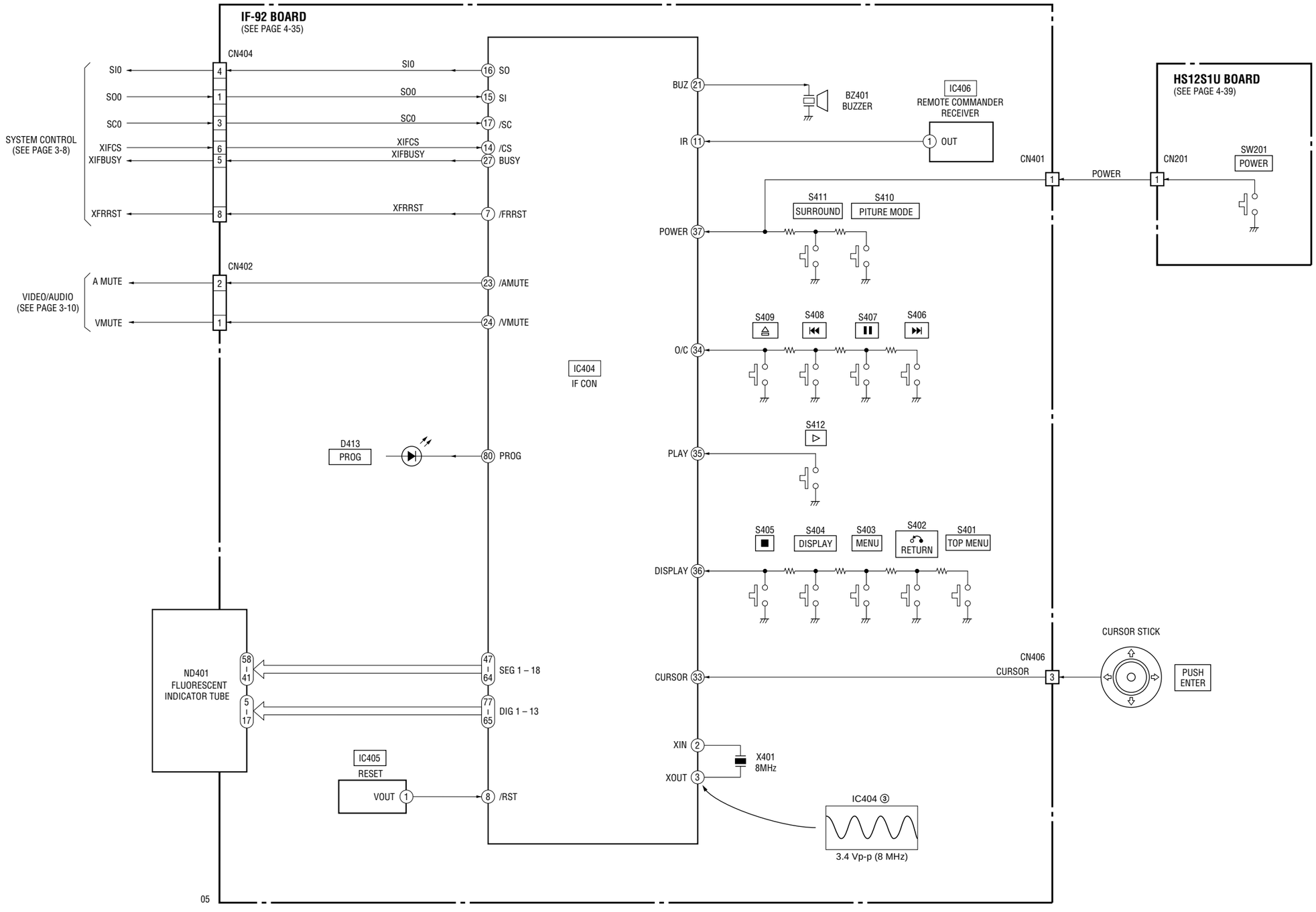


3-5. VIDEO/AUDIO BLOCK DIAGRAM

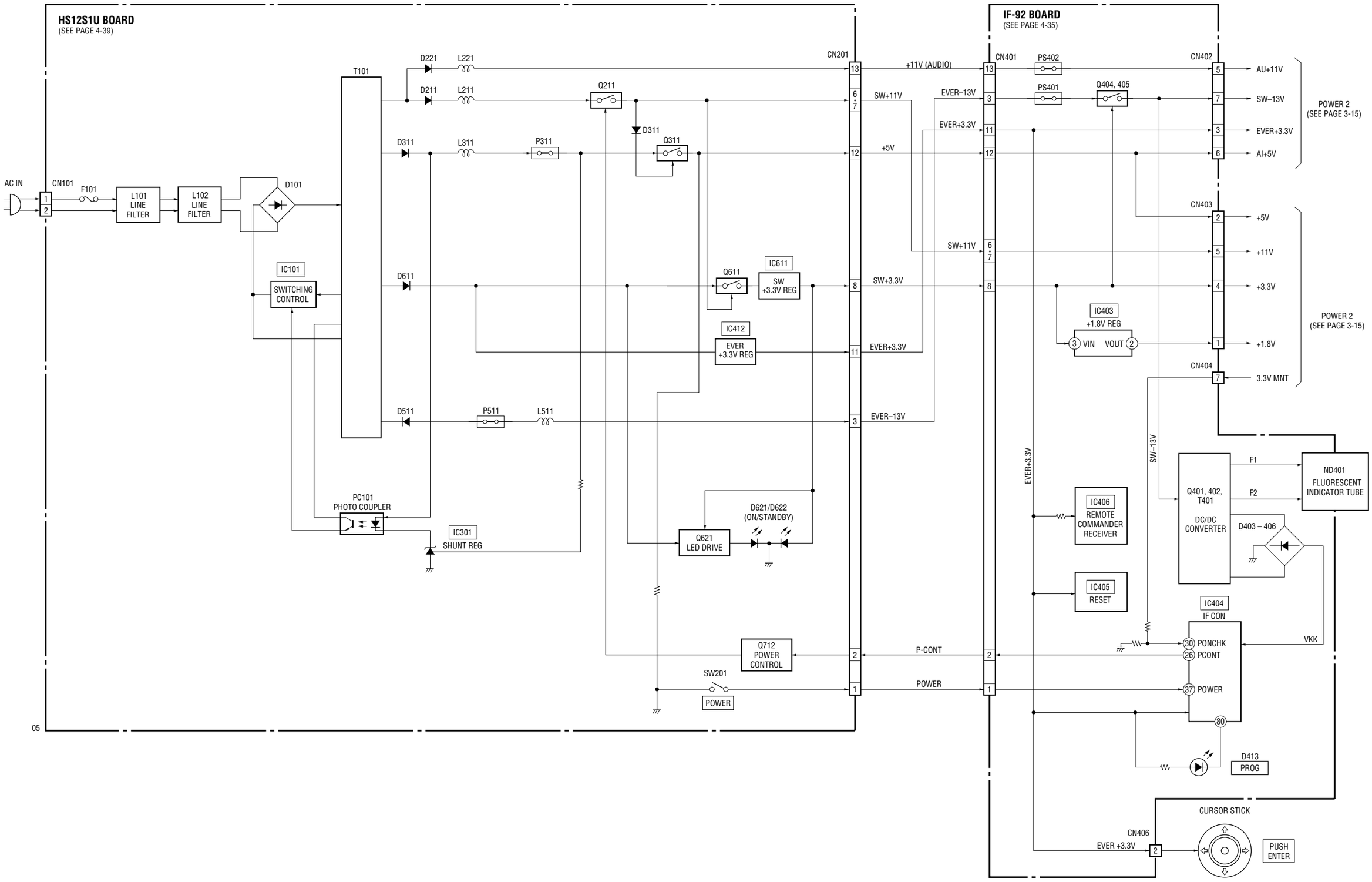


05

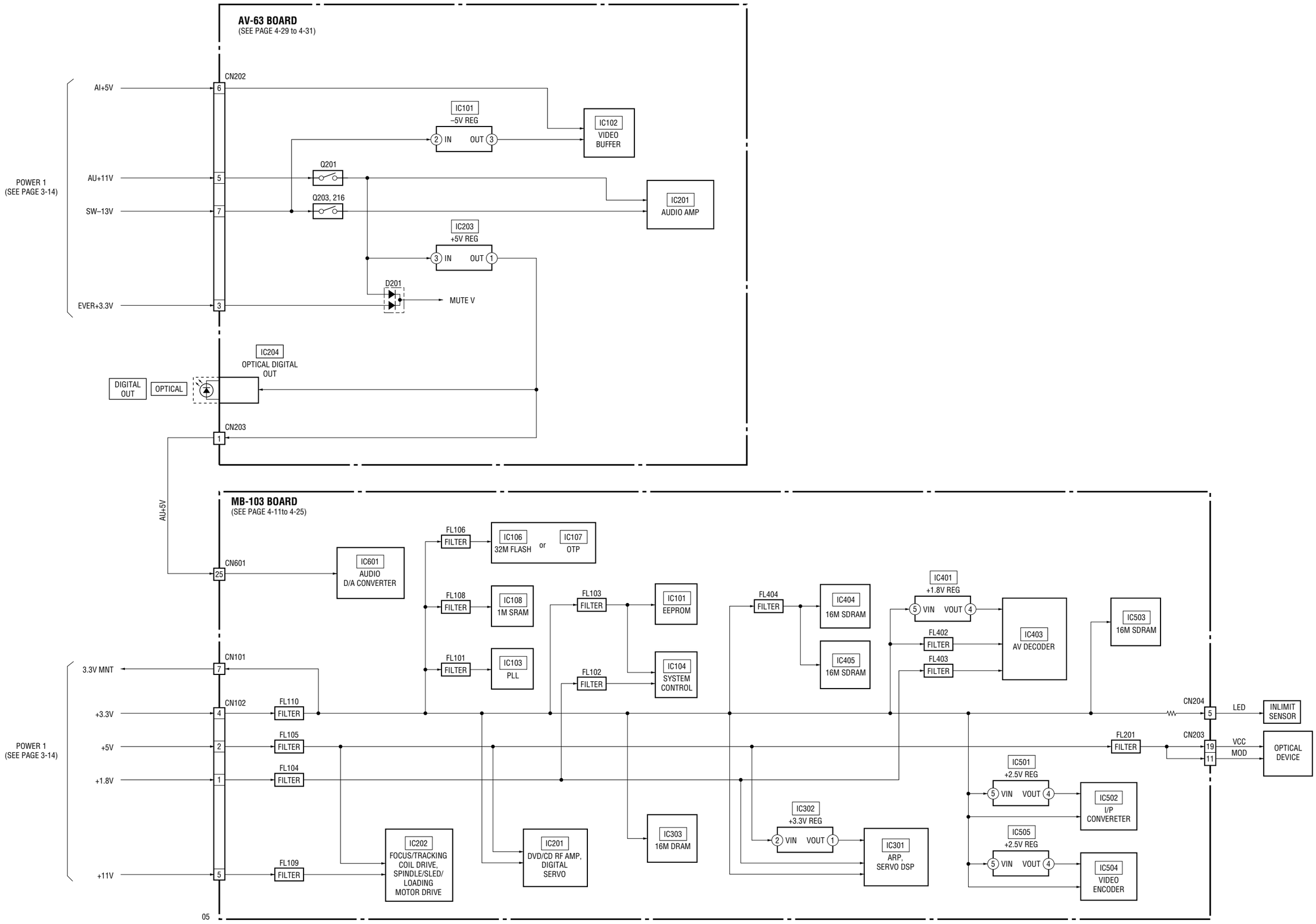
3-6. INTERFACE CONTROL BLOCK DIAGRAM



3-7. POWER 1 BLOCK DIAGRAM



3-8. POWER 2 BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

For printed wiring boards:

- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side A)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side B)	Parts on the parts face side seen from the parts face are indicated.

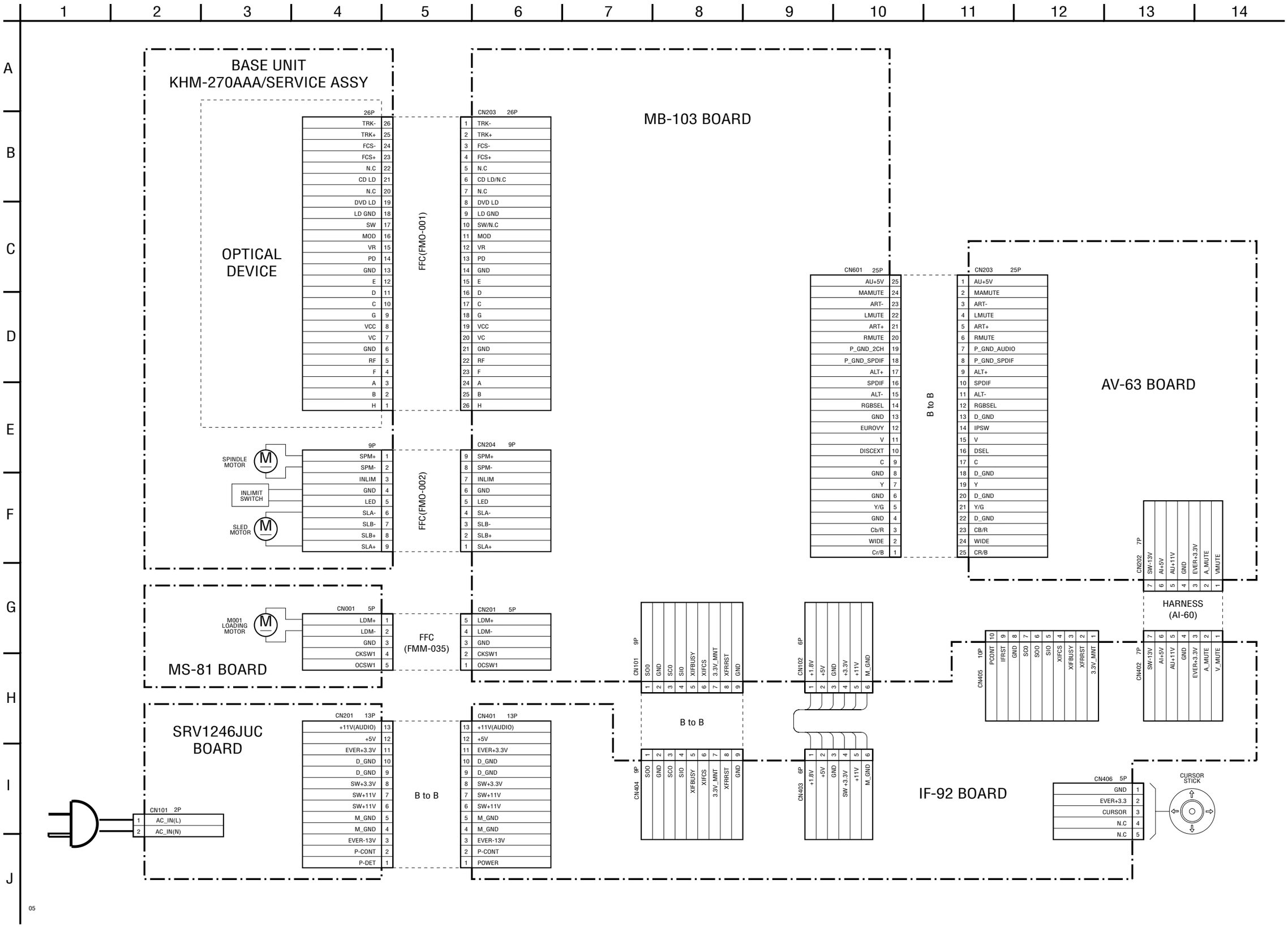
For schematic diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- B+ : B+ Line.
- B− : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

4-1. FRAME SCHEMATIC DIAGRAM



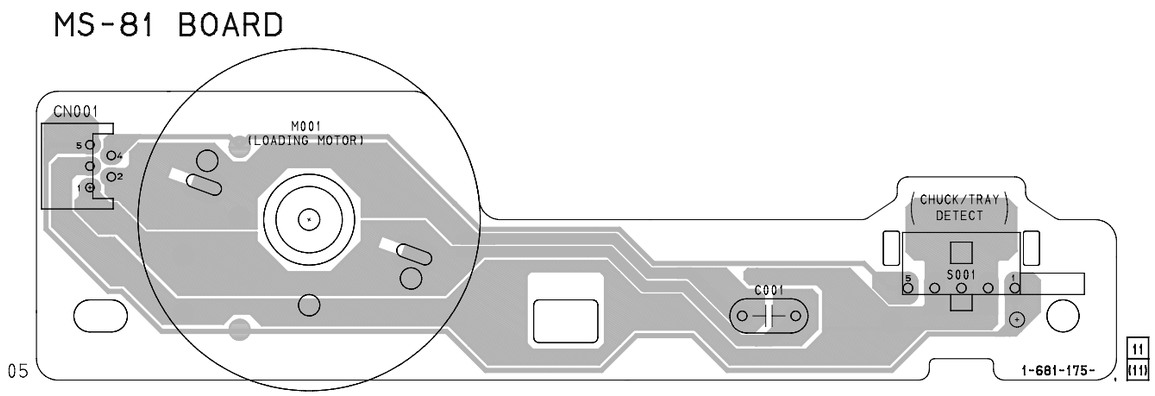
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

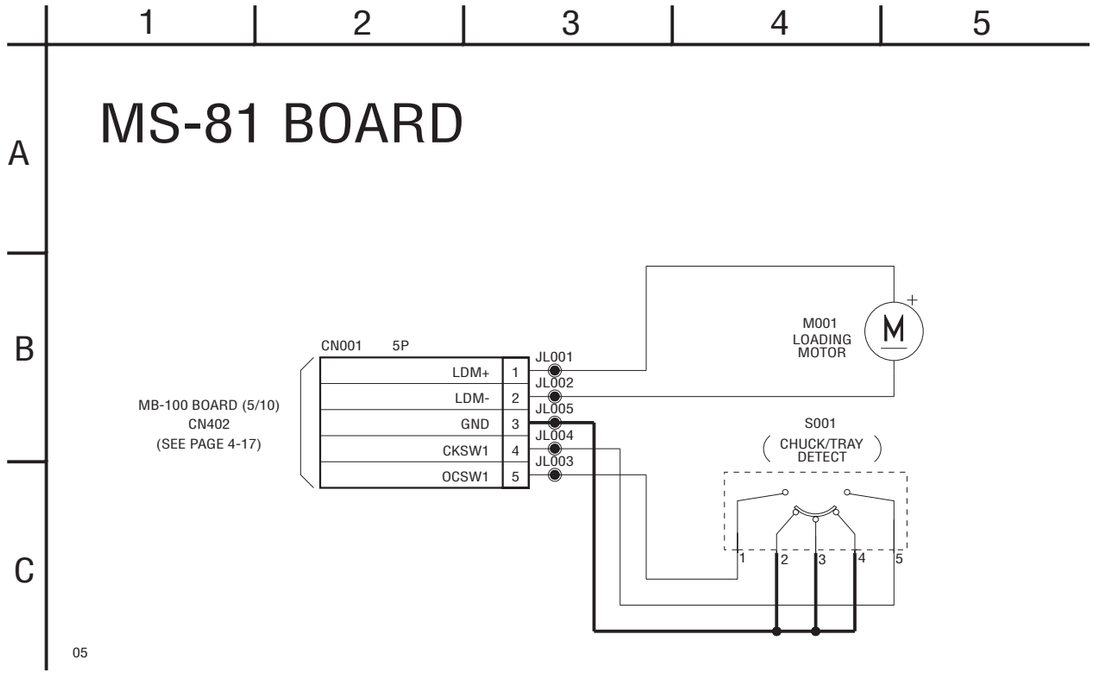
MS-81 (LOADING) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

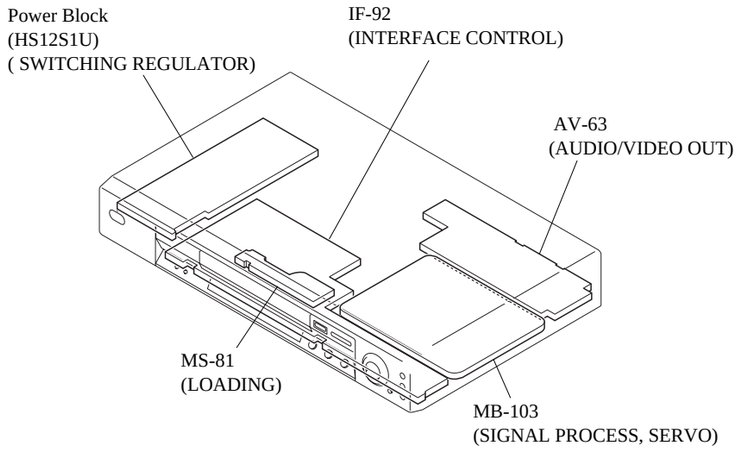
– Ref. No.: MS-81 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

: Uses unleaded solder.







There are a few cases that the part isn't mounted in this model is printed on this diagram.

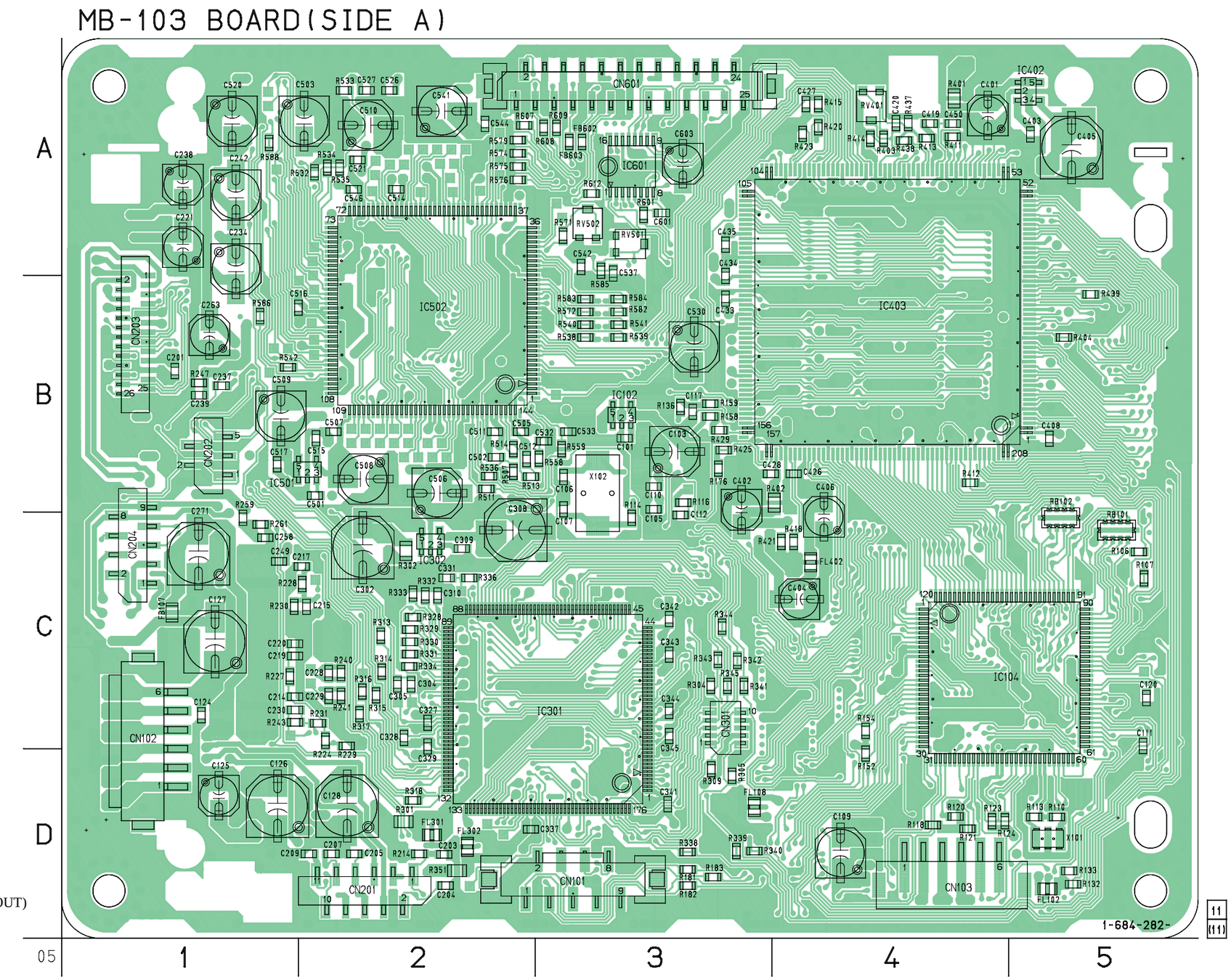
MB-103 (SIGNAL PROCESS, SERVO) PRINTED WIRING BOARD

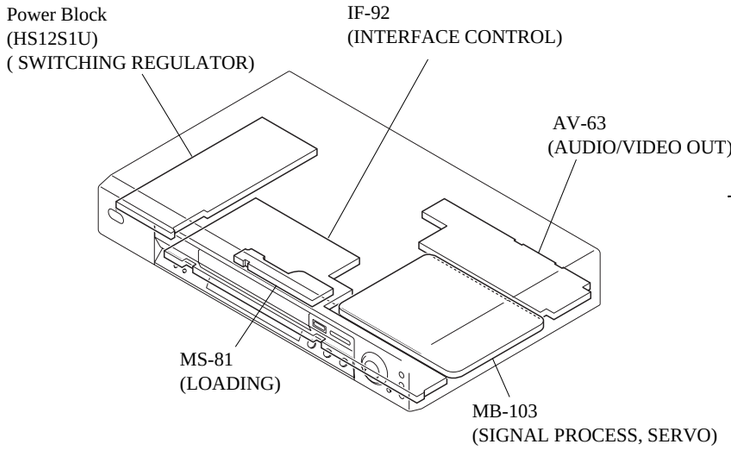
– Ref. No.: MB-103 board; 2,000 series –

: Uses unleaded solder.

MB-103 BOARD (SIDE A)

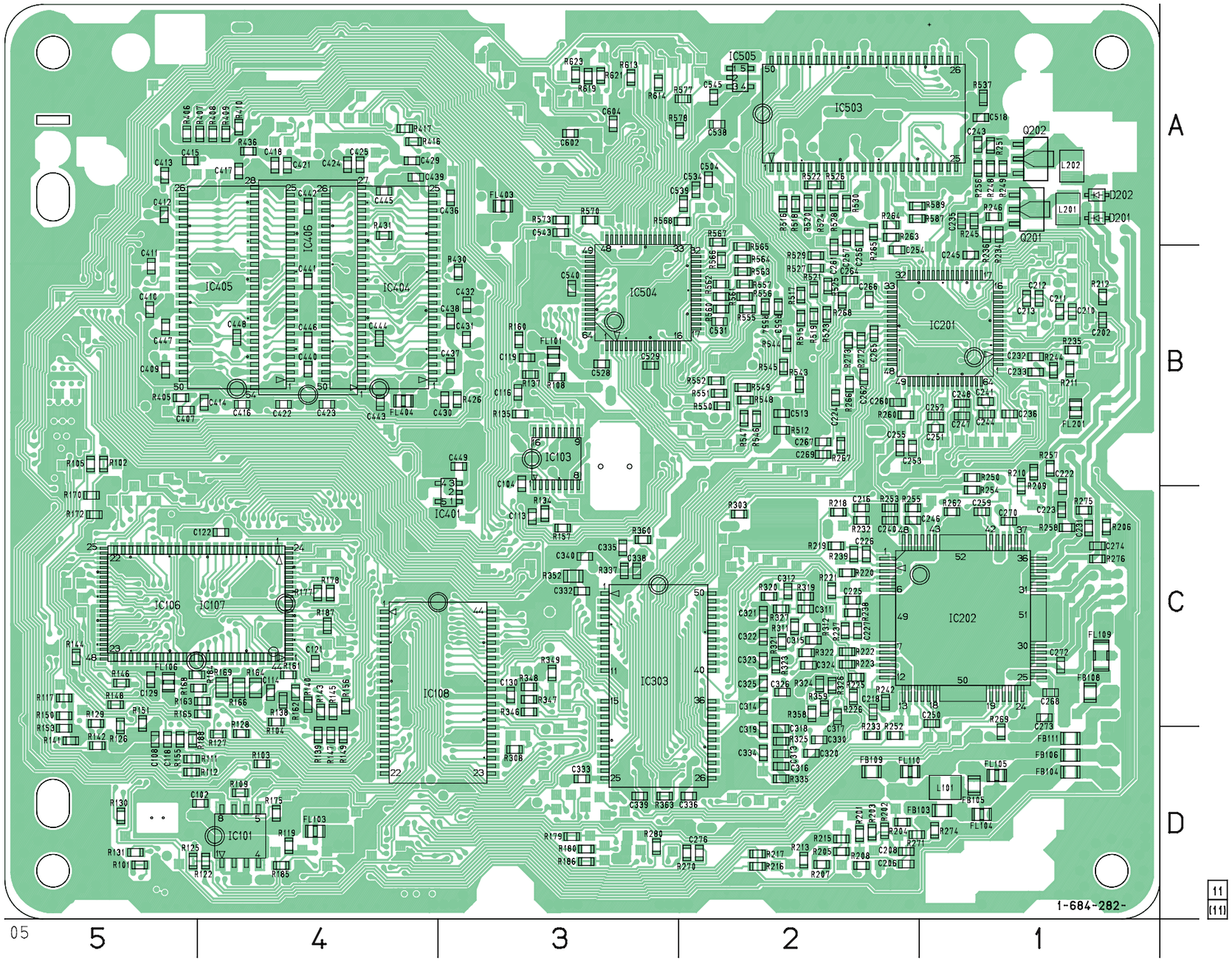
CN101	D-3
CN102	C-1
CN103	D-4
CN203	B-1
CN601	A-3
IC104	C-4
IC301	C-3
IC302	C-2
IC403	B-4
IC501	B-1
IC502	B-2
IC601	A-3





SIGNAL PROCESS, SERVO
MB-103

MB-103 BOARD(SIDE B)

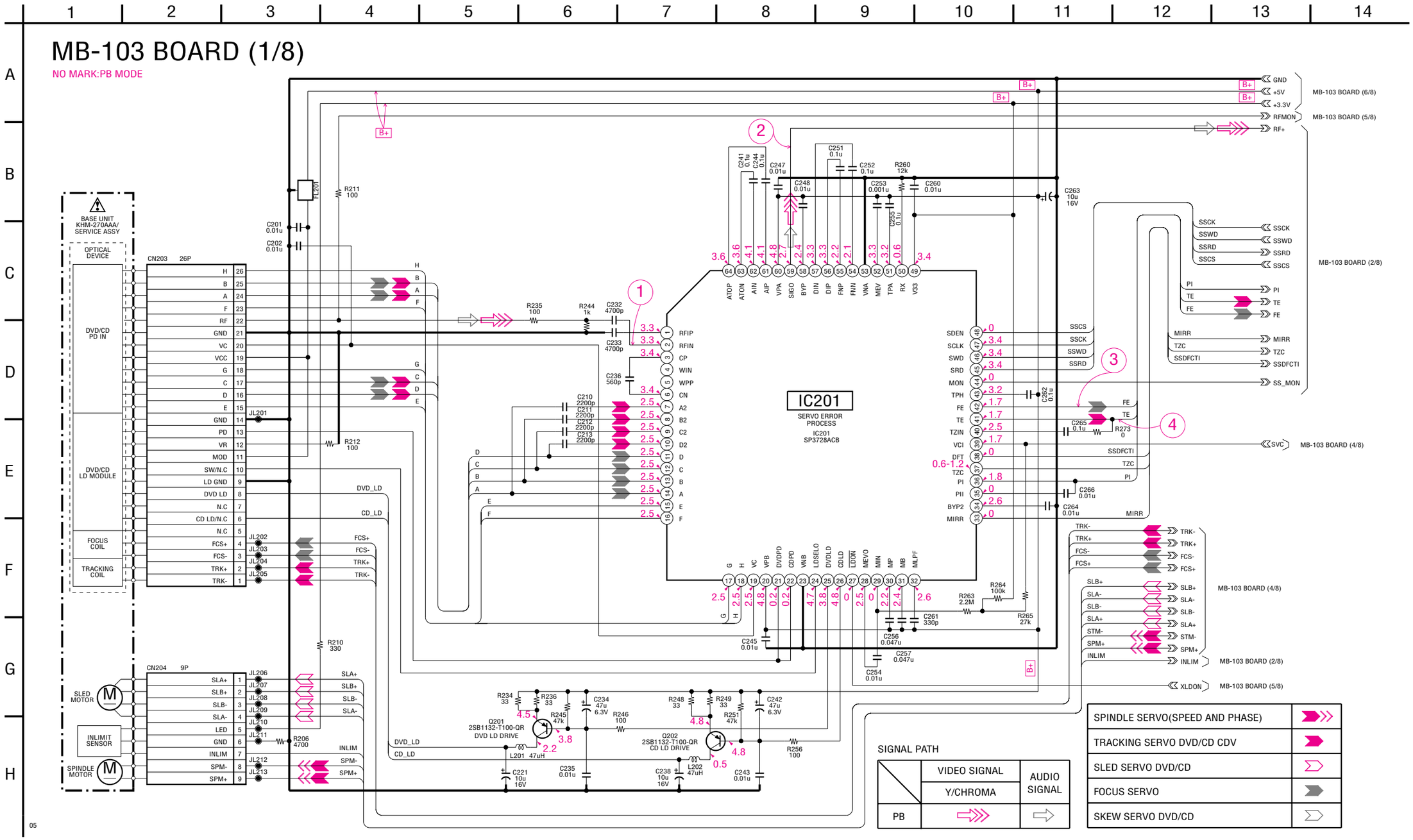


MB-103 BOARD (SIDE B)

IC101	D-4
IC103	B-3
IC106	C-5
IC108	C-4
IC201	B-1
IC202	C-1
IC303	C-3
IC401	C-3
IC404	B-4
IC405	B-4
IC503	A-2
IC504	B-3
IC505	A-2
Q201	A-1
Q202	A-1

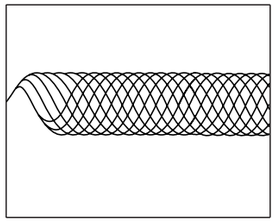
MB-103 (RF AMP, SERVO) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.
– Ref. No.: MB-103 board; 2,000 series –

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



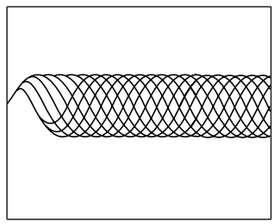
• Waveforms

❶ IC201 ② (DVD play)
200 mV/DIV 50 ns/DIV



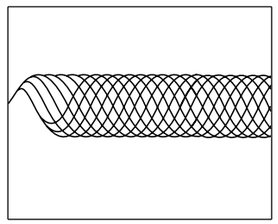
570 mVp-p

❶ IC201 ② (CD play)
200 mV/DIV 200 ns/DIV



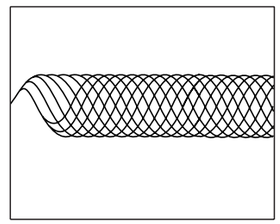
550 mVp-p

❷ IC201 ⑲ (DVD play)
500 mV/DIV 50 ns/DIV



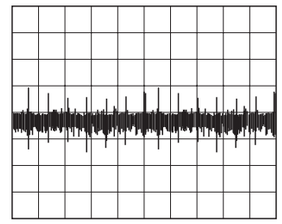
1.4 Vp-p

❷ IC201 ⑲ (CD play)
500 mV/DIV 200 ns/DIV



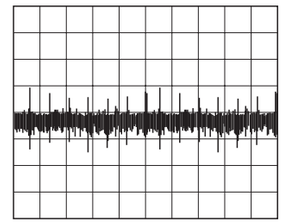
1.4 Vp-p

❸ IC201 ㊷ (DVD play)
100 mV/DIV 50 ms/DIV



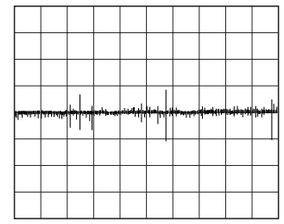
180 mVp-p

❸ IC201 ㊷ (CD play)
500 mV/DIV 50 ms/DIV



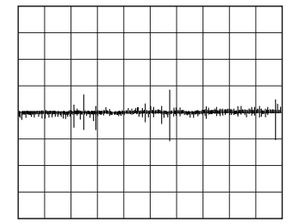
860 mVp-p

❹ IC201 ㊶ (DVD play)
500 mV/DIV 50 ms/DIV



1.5 Vp-p

❹ IC201 ㊶ (CD play)
500 mV/DIV 200 ms/DIV



1.7 Vp-p

MB-103 (ARP, SERVO DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-103 board; 2,000 series –

MB-103 BOARD (2/8)

NO MARK:PB MODE

IC301
ARP,SERVO DSP
IC301
CXD9703R

IC302
+3.3V REG

IC303
16M DRAM
GM71V18160CT-6TR

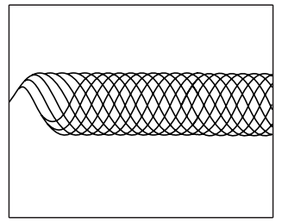
SIGNAL PATH

	VIDEO SIGNAL	AUDIO SIGNAL
PB	Y/CHROMA	

SPINDLE SERVO(SPEED AND PHASE)	
TRACKING SERVO DVD/CD CDV	
SLED SERVO DVD/CD	
FOCUS SERVO	
SKEW SERVO DVD/CD	

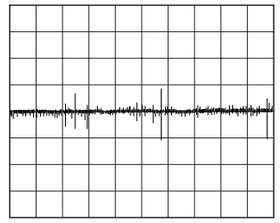
• Waveforms

❶ IC301 ⑪① (DVD play)
500 mV/DIV 100 ns/DIV



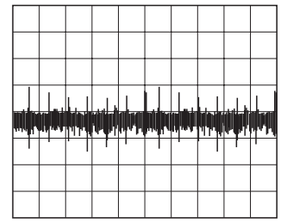
1.4 Vp-p

❸ IC301 ⑫④ (DVD play)
500 mV/DIV 50 ms/DIV



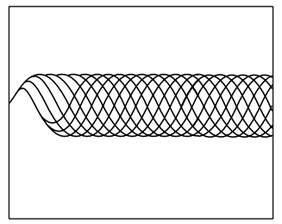
1.4 Vp-p

❹ IC301 ⑫⑤ (DVD play)
100 mV/DIV 50 ms/DIV



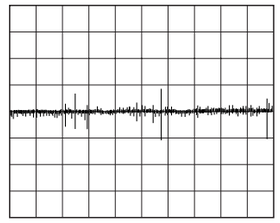
160 mVp-p

❷ IC301 ⑪③ (CD play)
500 mV/DIV 200 ns/DIV



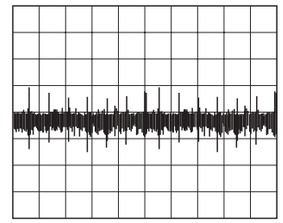
1.4 Vp-p

❸ IC301 ⑫④ (CD play)
500 mV/DIV 200 ms/DIV



1.7 Vp-p

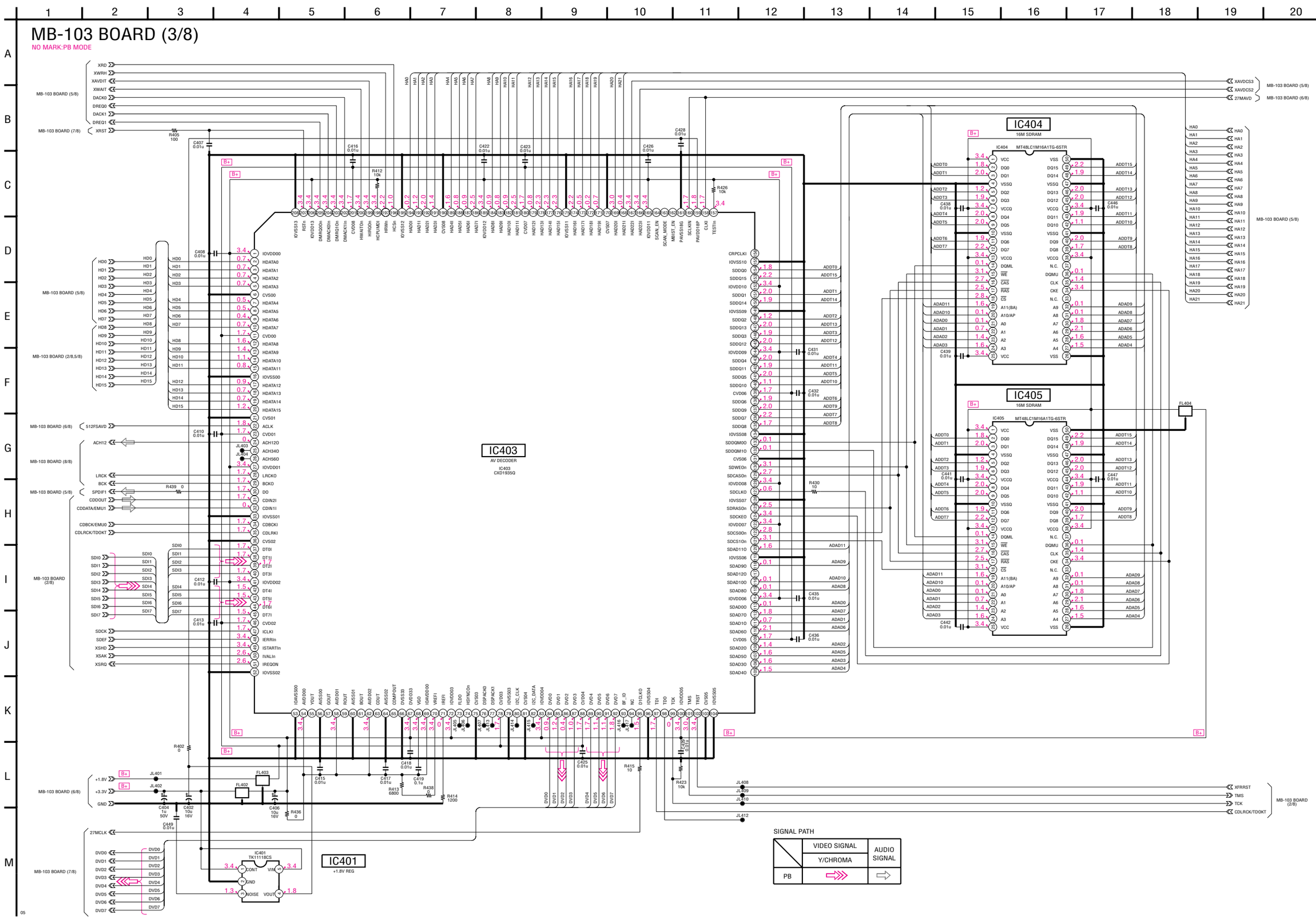
❹ IC301 ⑫⑤ (CD play)
500 mV/DIV 50 ms/DIV



860 mVp-p

MB-103 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-103 board; 2,000 series –



AV DECODER
MB-103 (3/8)

MB-103 (DRIVE) SCHEMATIC DIAGRAM **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-103 board; 2,000 series –

MB-103 BOARD (4/8)

NO MARK:PB MODE

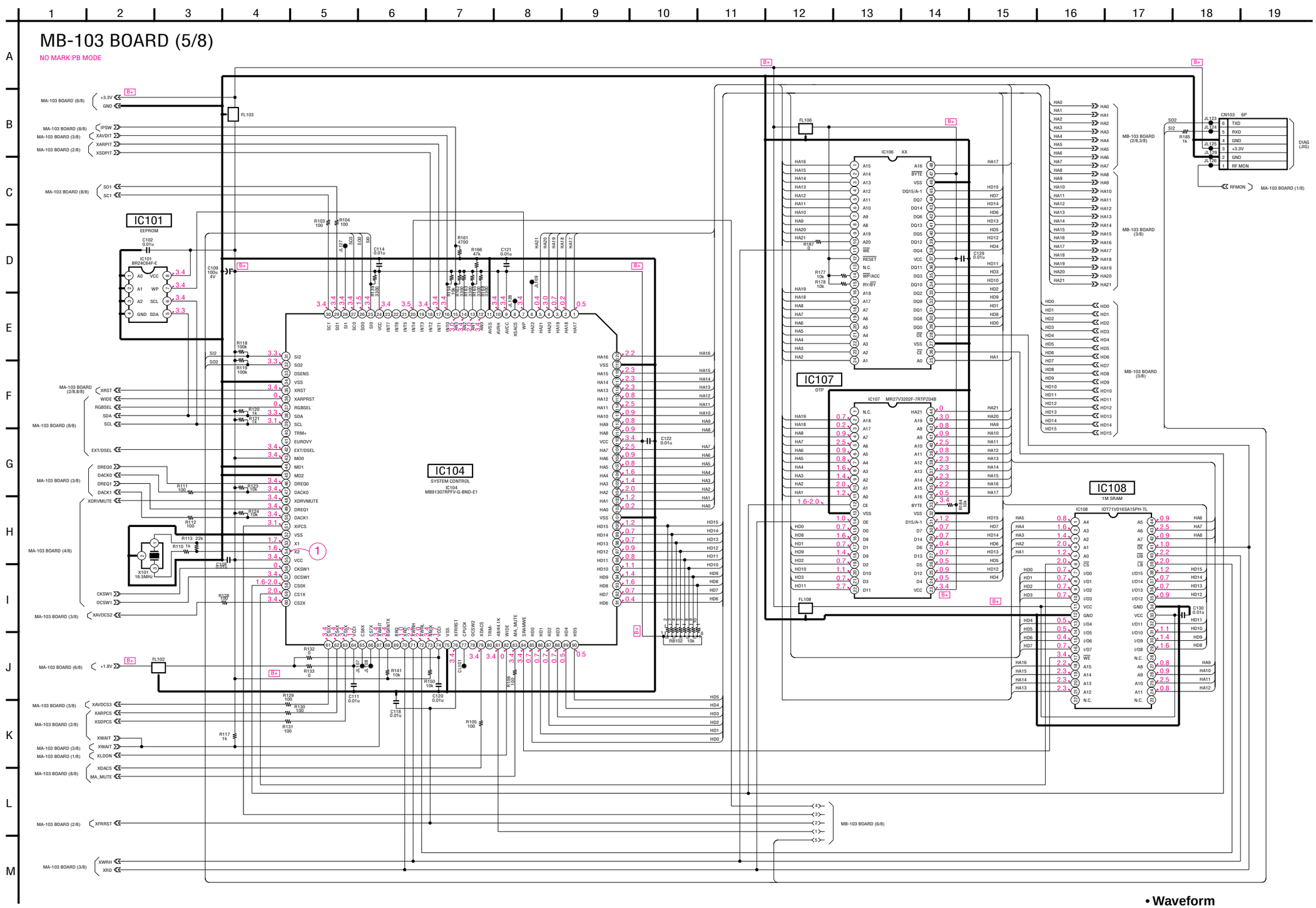
SIGNAL PATH

SPINDLE SERVO(SPEED AND PHASE)	
TRACKING SERVO DVD/CD CDV	
SLED SERVO DVD/CD	
FOCUS SERVO	
SKEW SERVO DVD/CD	

IC202
FOCUS/TRACKING
COIL DRIVE
SPINDLE/SLED/
LOADING
MOTOR DRIVE
IC202
FAN8034L

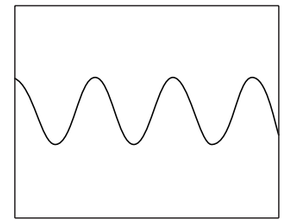
MB-103 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-103 board; 2,000 series –



• **Waveform**

❶ IC104 ㊹



1.7 Vp-p (16.5 MHz)

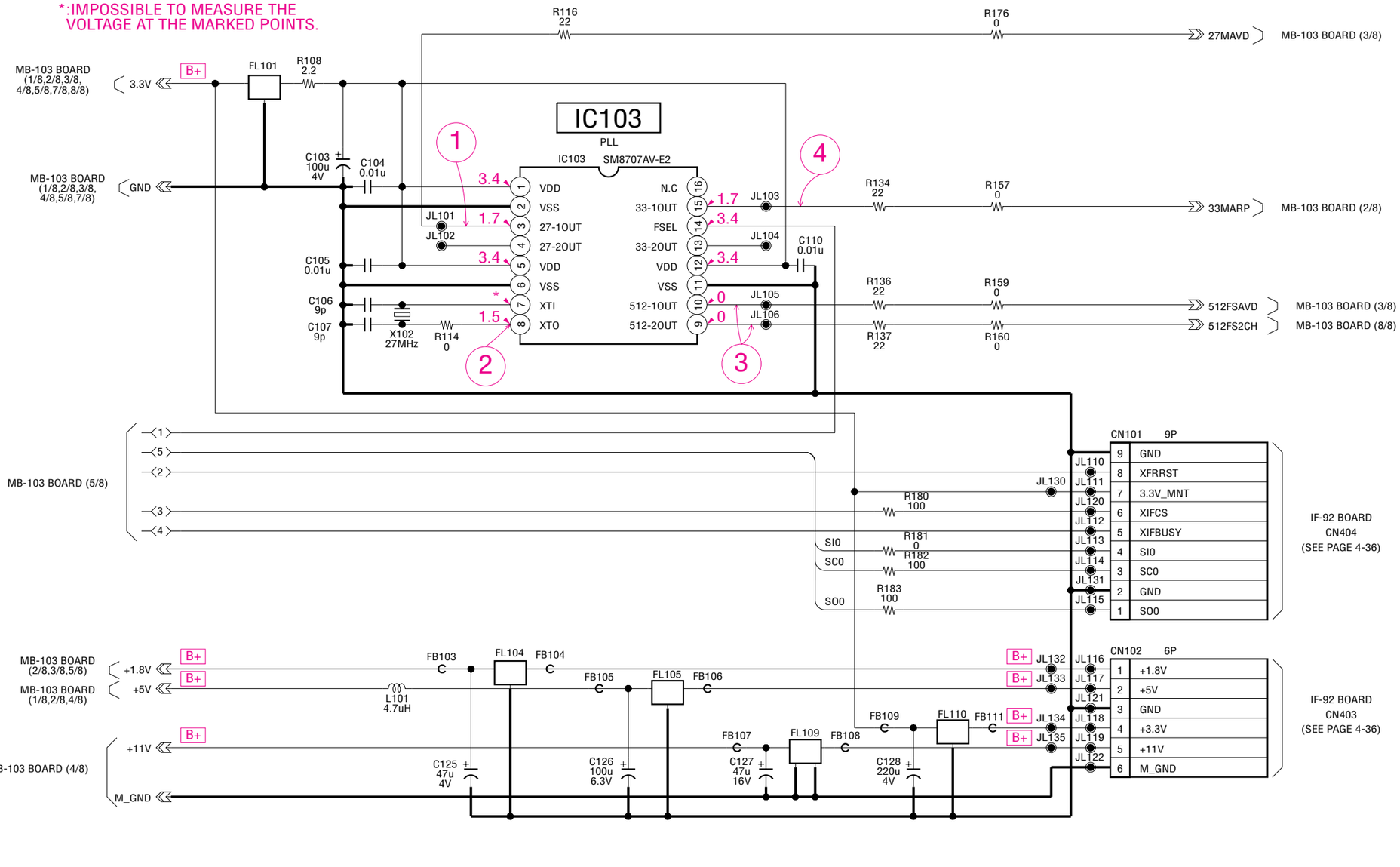
SYSTEM CONTROL
MB-103 (5/8)

MB-103 (CLOCK GENERATOR) SCHEMATIC DIAGRAM **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-103 board; 2,000 series –

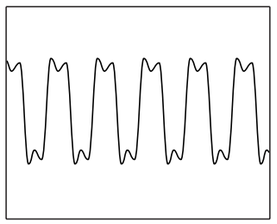
MB-103 BOARD (6/8)

NO MARK:PB MODE
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.



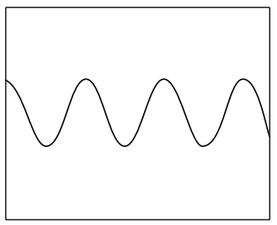
• Waveforms

❶ IC103 ③



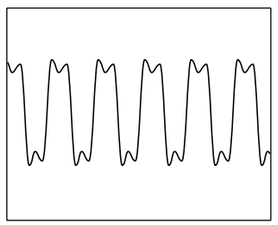
3.5 Vp-p (27 MHz)

❷ IC103 ⑧



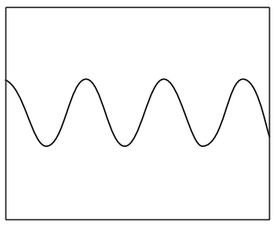
1.5 Vp-p (27 MHz)

❸ IC103 ⑨, ⑩



DVD : 3.3 Vp-p (24.57 MHz)
CD : 3.3 Vp-p (22.58 MHz)

❹ IC103 ⑮



3.2 Vp-p (33.87 MHz)

MB-103 (I/P CONVERTER) SCHEMATIC DIAGRAM **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-103 board; 2,000 series –

MB-103 BOARD (7/8)

NO MARK:PB MODE

IC502
I/P CONVERTER
IC502
CXD9698R

IC503
16M SDRAM
IC503
HY57V161610DTC-7TR

IC501
+2.5V REG
IC501
MM1385NNLE

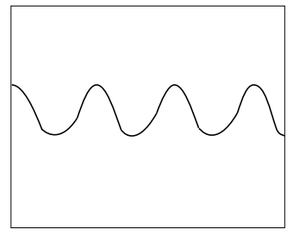
MB-103 BOARD (5/8,8/8)
MB-103 BOARD (3/8)
MB-103 BOARD (6/8)
MB-103 BOARD (8/8)

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
PB	⇨	⇨	⇨

• Waveform

❶ IC502 ⑯

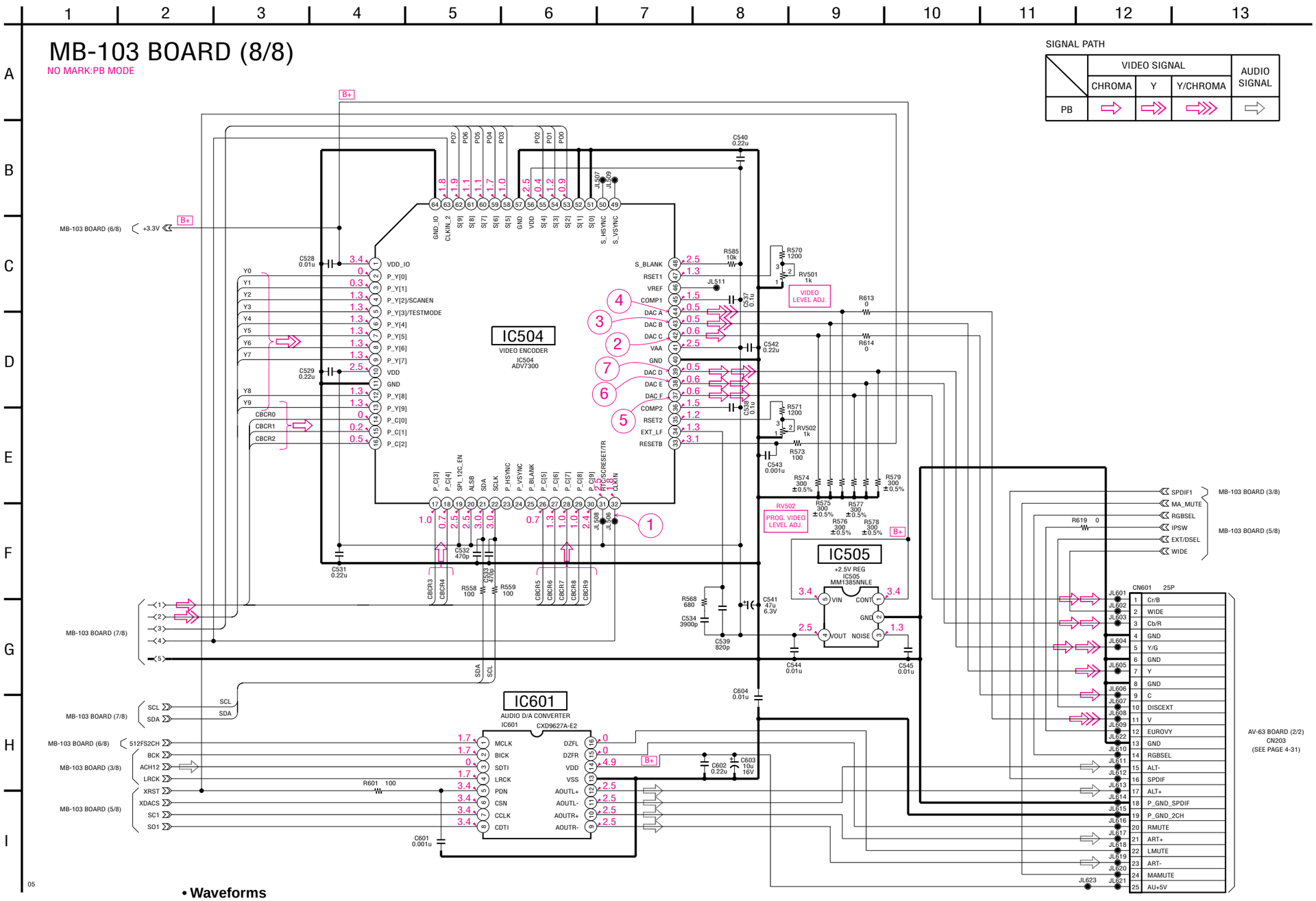


1.6 Vp-p (66 MHz)

I/P CONVERTER
MB-103 (7/8)

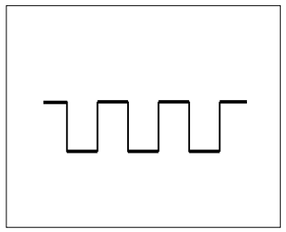
MB-103 (VIDEO ENCODER, AUDIO D/A CONVERTER) SCHEMATIC DIAGRAM **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-103 board; 2,000 series –



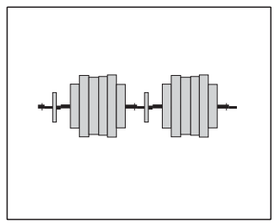
• Waveforms

❶ IC504 ㉜



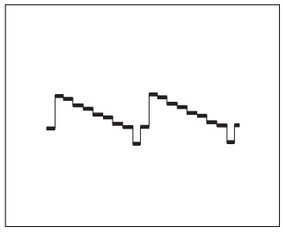
3.3 Vp-p (27 MHz)

❷ IC504 ㊷



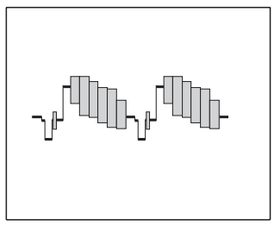
1.8 Vp-p (H)

❸ IC504 ㊸



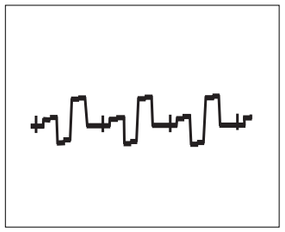
2.0 Vp-p (H)

❹ IC504 ㊹



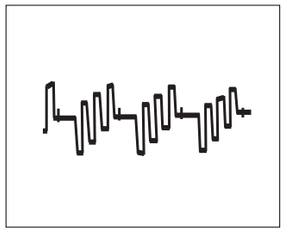
2.4 Vp-p (H)

❺ IC504 ㊲



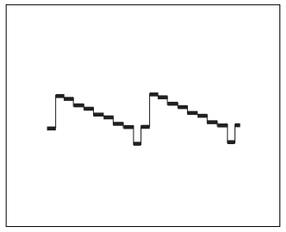
1.3 Vp-p (H)

❻ IC504 ㊳



1.3 Vp-p (H)

❼ IC504 ㊴



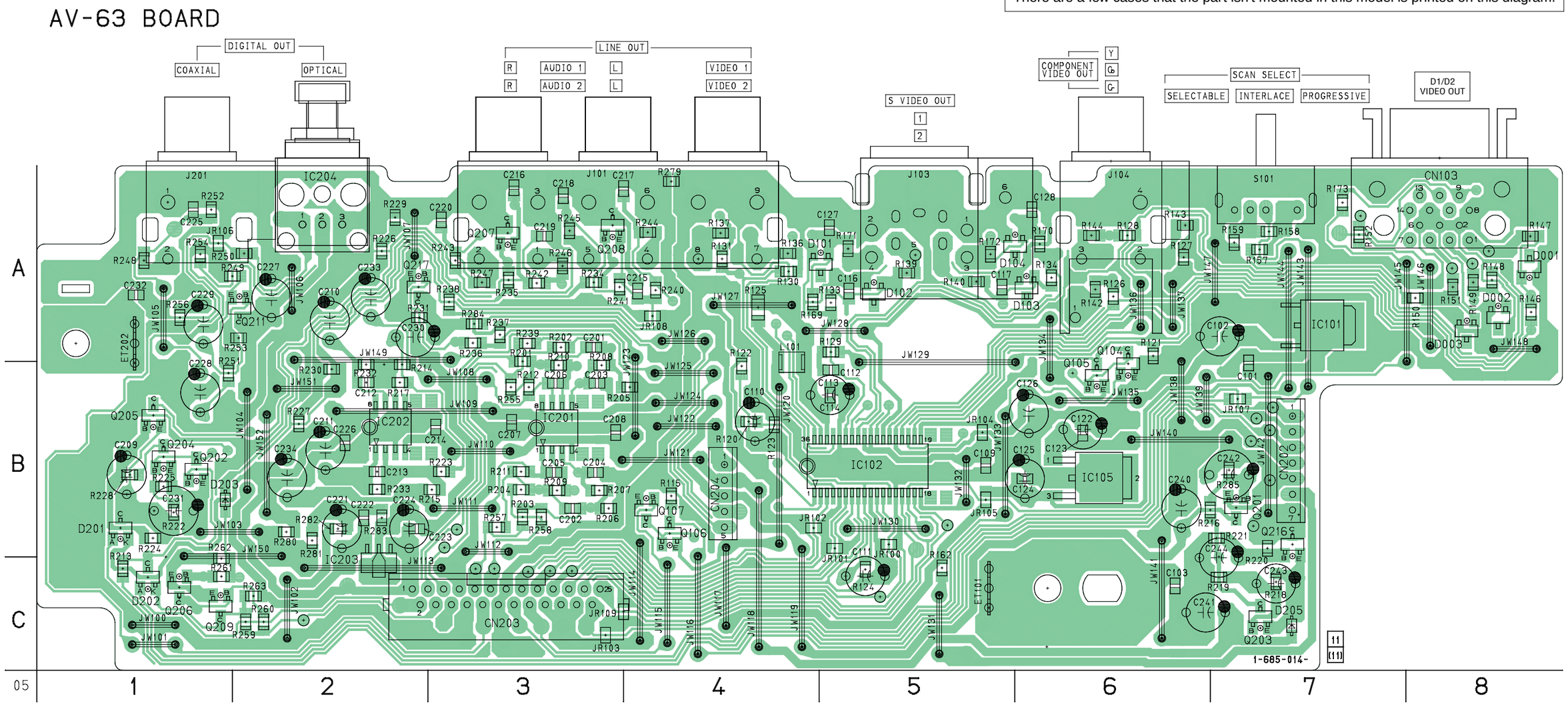
2.0 Vp-p (H)

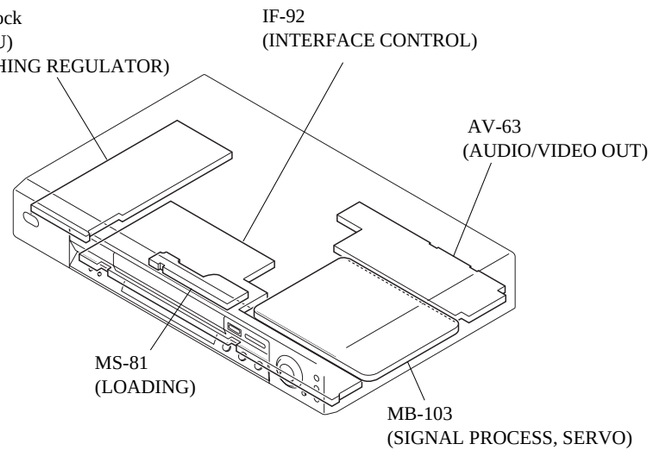
AV-63 (AUDIO/VIDEO OUT) PRINTED WIRING BOARD

– Ref. No.: AV-63 board; 1,000 series –

: Uses unleaded solder.

There are a few cases that the part isn't mounted in this model is printed on this diagram.





AV-63 BOARD

CN103	A-8
CN202	B-7
D001	A-8
D002	A-8
D003	A-8
D101	A-5
D102	A-5
D103	A-6
D104	A-5
D201	B-1
D202	C-1
D205	C-7
IC101	A-7
IC102	B-5
IC201	B-3
IC203	C-2
IC204	A-2
Q101	B-6
Q105	B-6
Q106	B-4
Q107	B-4
Q201	B-7
Q202	B-1
Q203	C-7
Q204	B-1
Q205	B-1
Q207	A-3
Q208	A-3
Q211	A-2
Q216	B-7

AV-63 (VIDEO BUFFER) SCHEMATIC DIAGRAM

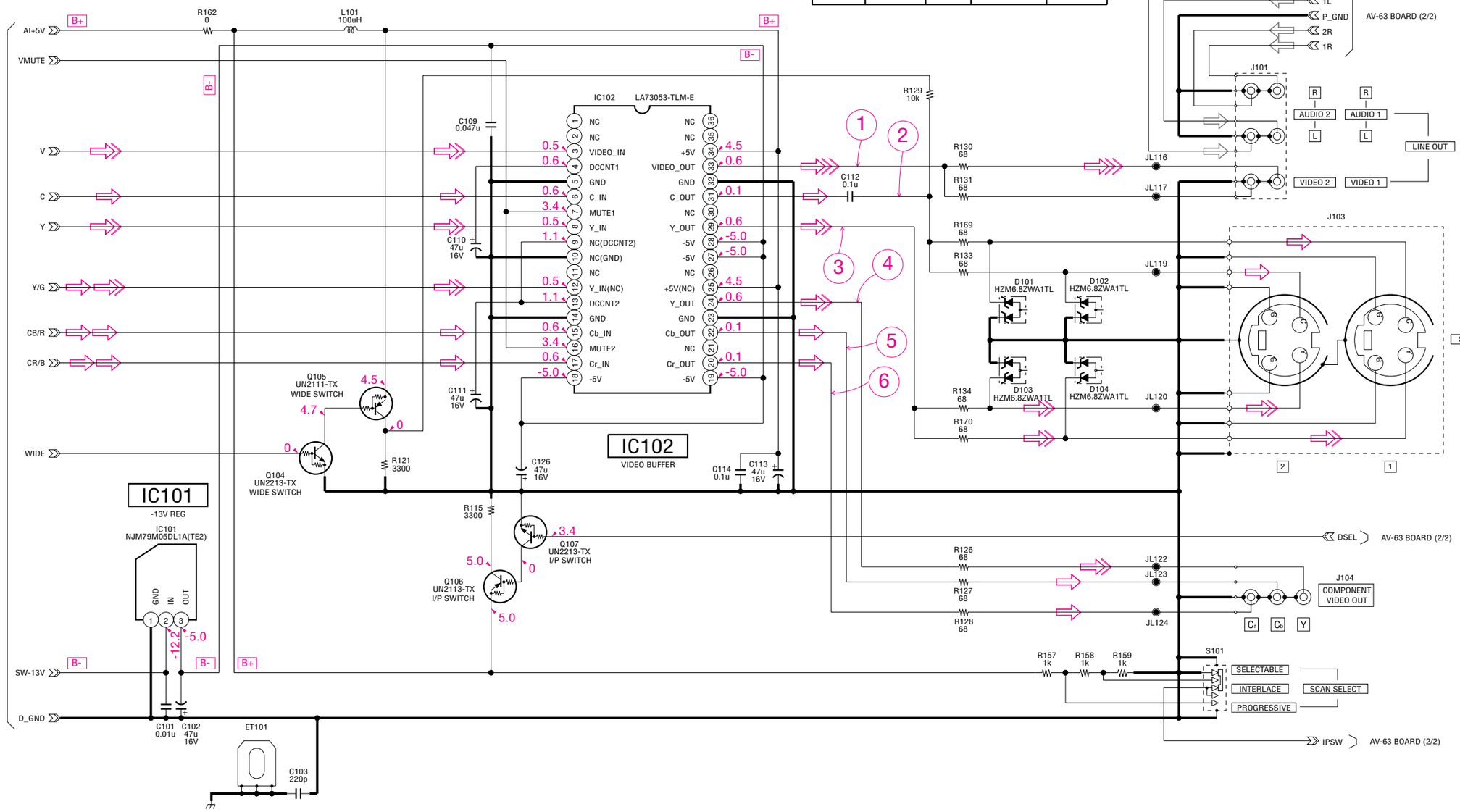
– Ref. No.: AV-63 board; 1,000 series –

AV-63 BOARD (1/2)

NO MARK:PB MODE

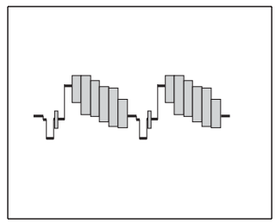
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨



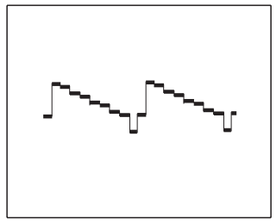
• Waveforms

❶ IC102 ㉝



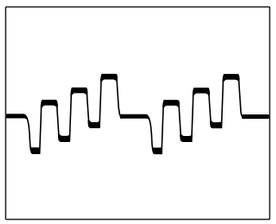
2.4 Vp-p (H)

❸ IC102 ㉙



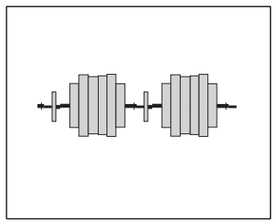
2.0 Vp-p (H)

❺ IC102 ㉒



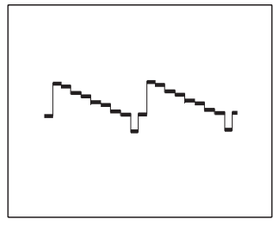
1.3 Vp-p (H)

❷ IC102 ㉛



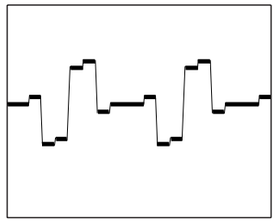
1.8 Vp-p (H)

❹ IC102 ㉔



2.0 Vp-p (H)

❻ IC102 ⑳



1.3 Vp-p (H)

VIDEO BUFFER
AV-63 (1/2)

AV-63 (AUDIO AMP) SCHEMATIC DIAGRAM • See page 4-27 for printed wiring board.

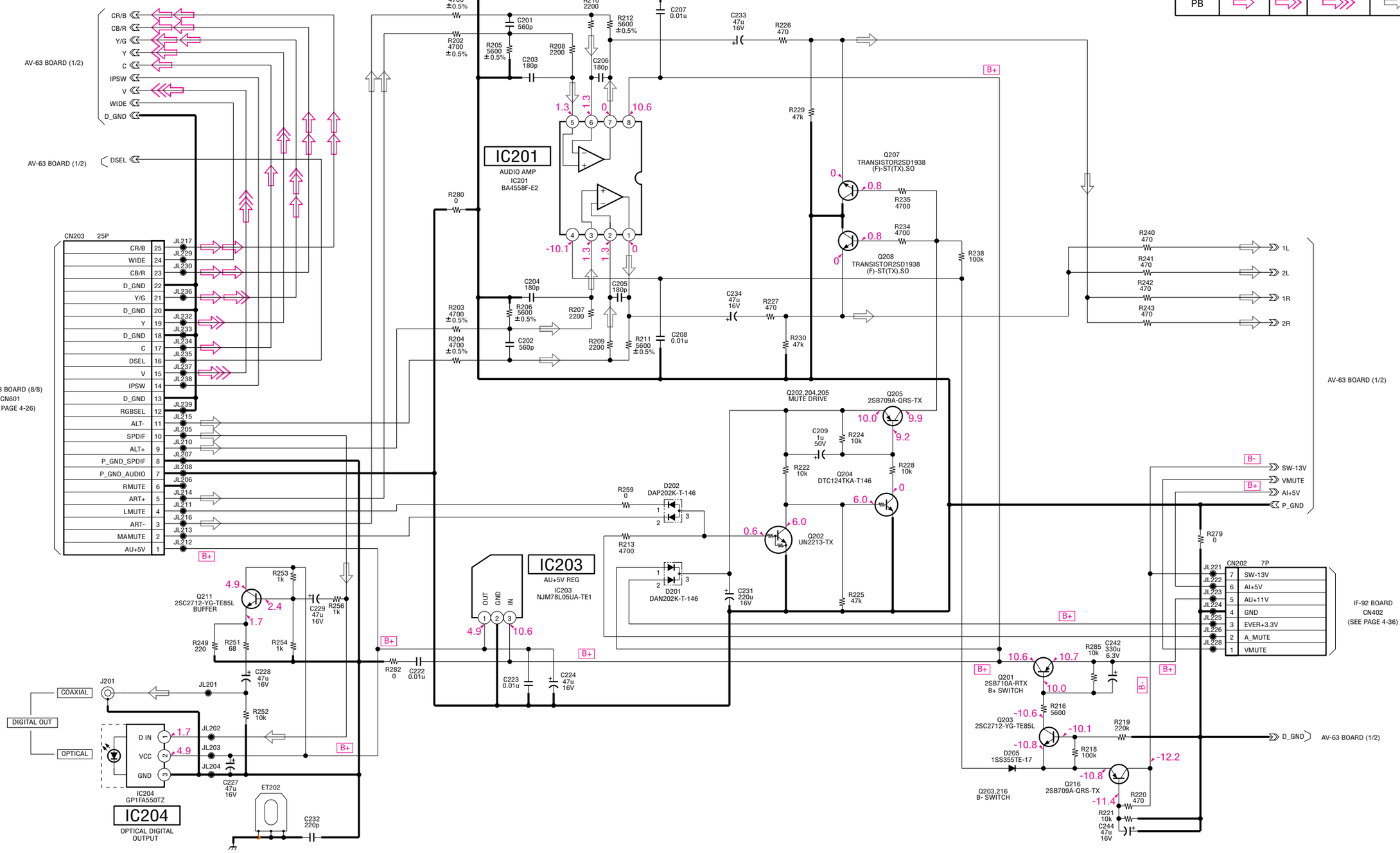
– Ref. No.: AV-63 board; 1,000 series –

AV-63 BOARD (2/2)

NO MARK:PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨



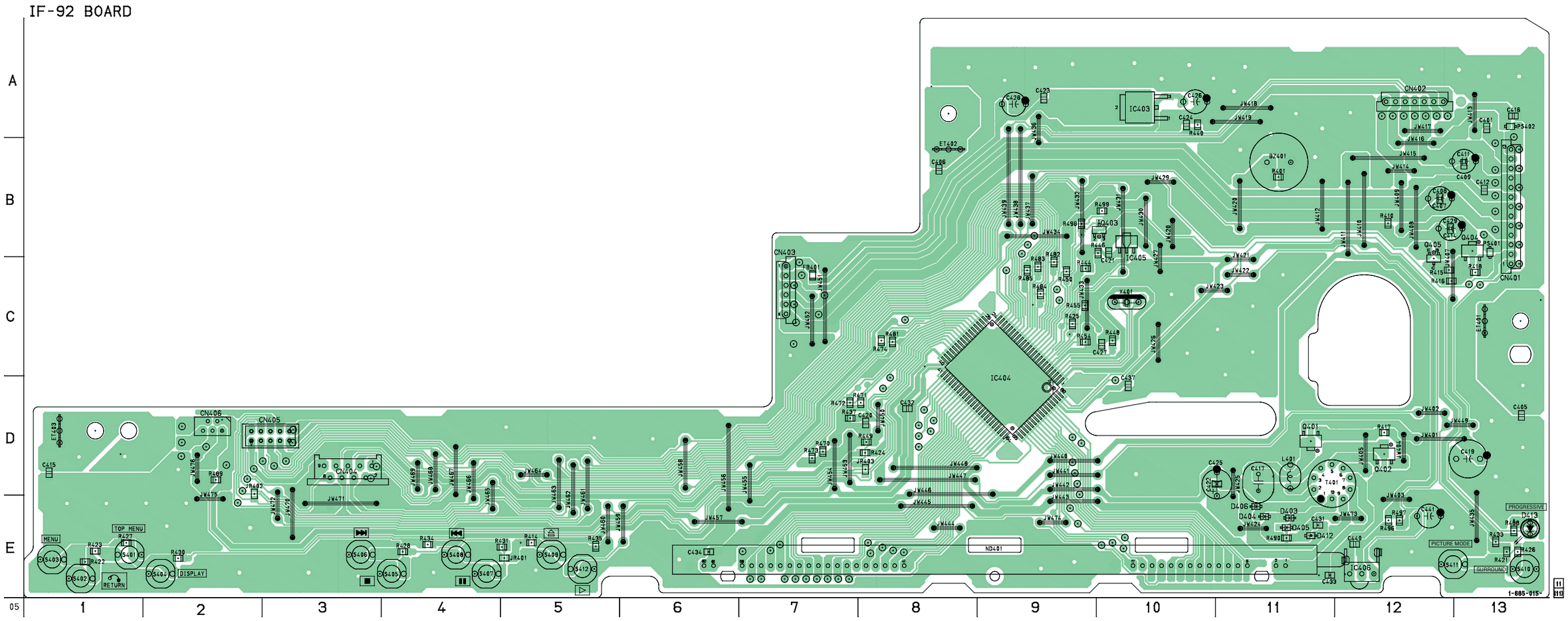
AUDIO AMP
AV-63 (2/2)

IF-92 (INTERFACE CONTROL) PRINTED WIRING BOARD

– Ref. No.: IF-92 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

: Uses unleaded solder.



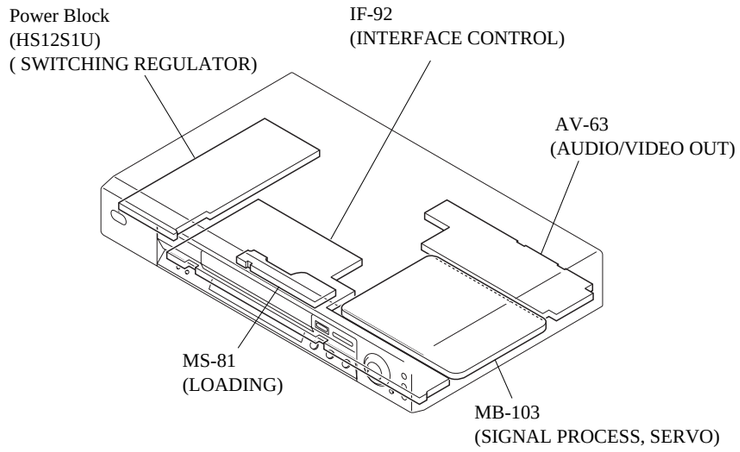
IF-92 BOARD

CN405 D-2
CN406 D-2

D403 E-11
D404 E-11
D405 E-11
D406 E-11
D412 E-11
D413 E-13

IC403 A-10
IC404 D-9
IC405 B-10
IC406 E-12

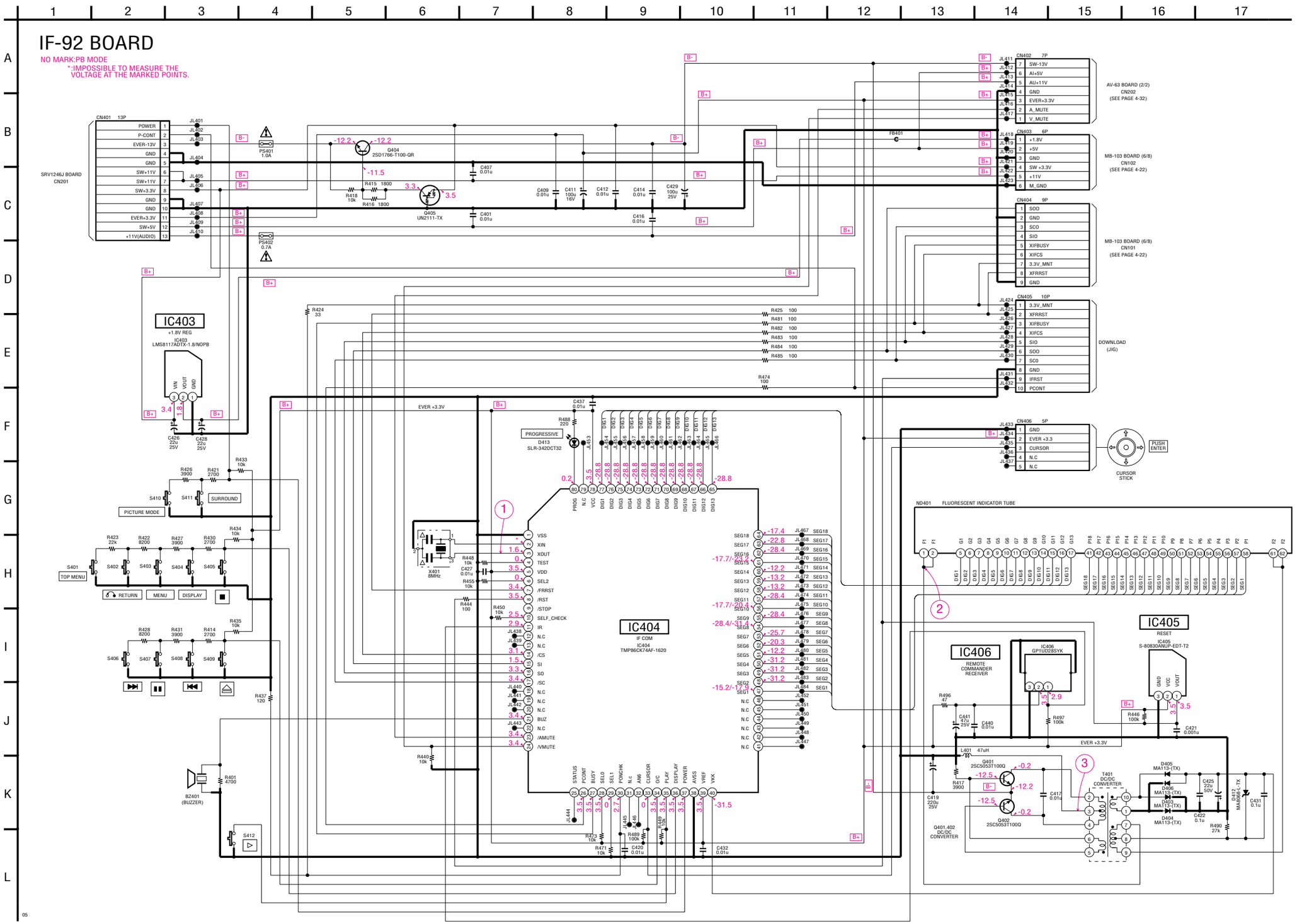
Q401 D-11
Q402 D-12
Q404 B-13
Q405 B-12



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

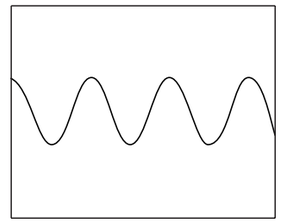
IF-92 (IF CON) SCHEMATIC DIAGRAM

– Ref. No.: IF-92 board; 1,000 series –



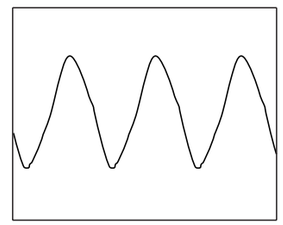
• **Waveforms**

❶ IC404 ③



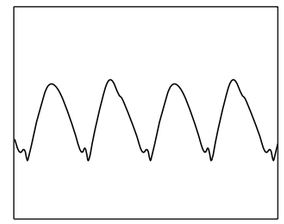
3.4 Vp-p (8 MHz)

❷ ND401 ①, ②



8 Vp-p (200 kHz)

❸ T401 ③



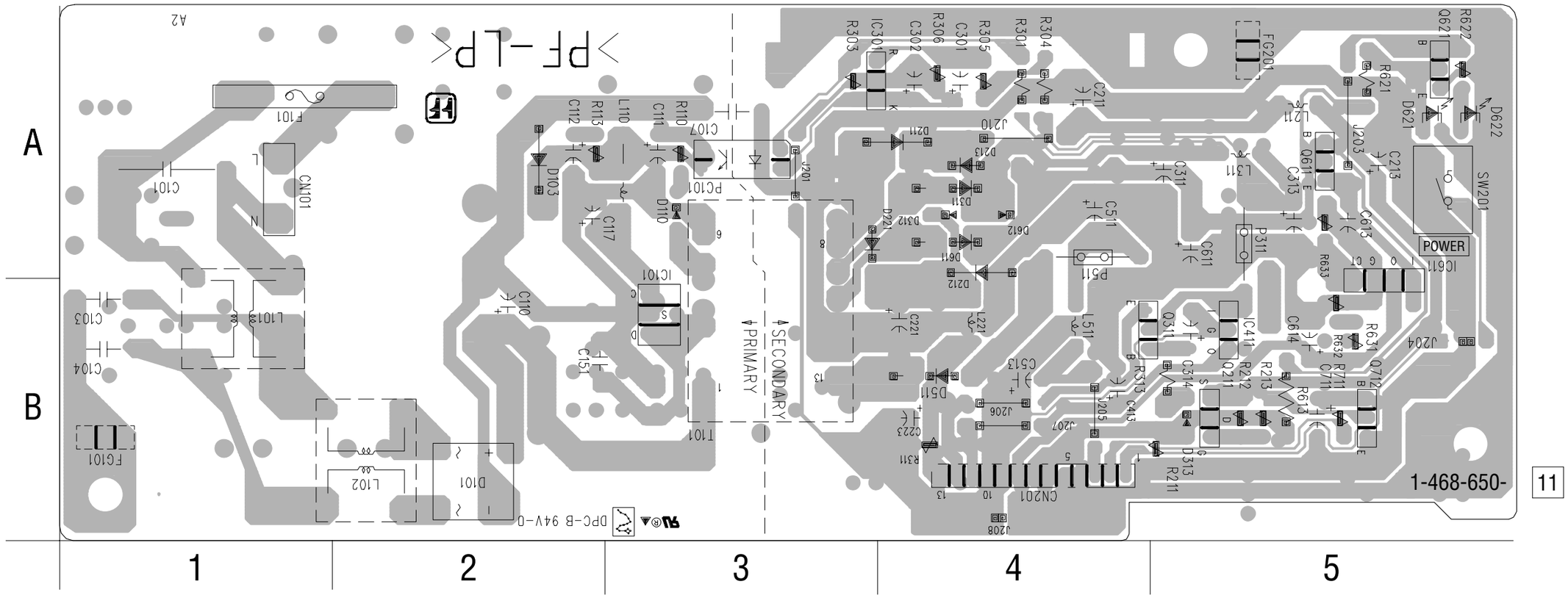
20 Vp-p (409 kHz)

HS12S1U (SWITCHING REGULATOR) PRINTED WIRING BOARD
– Ref. No.: HS12S1U board; 5,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

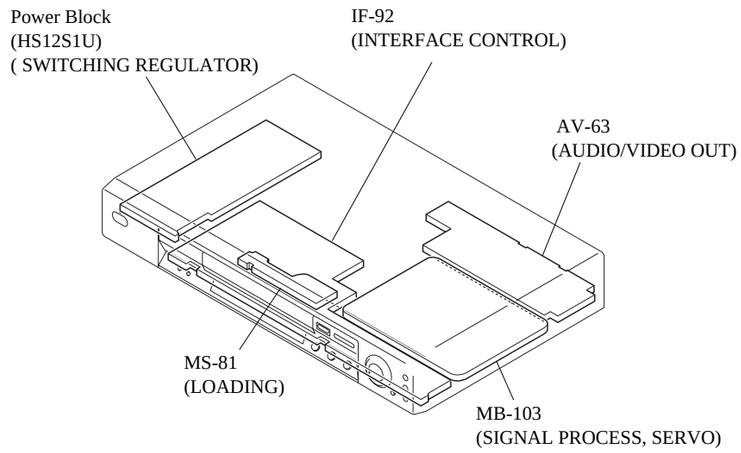
: Uses unleaded solder.

HS12S1U BOARD



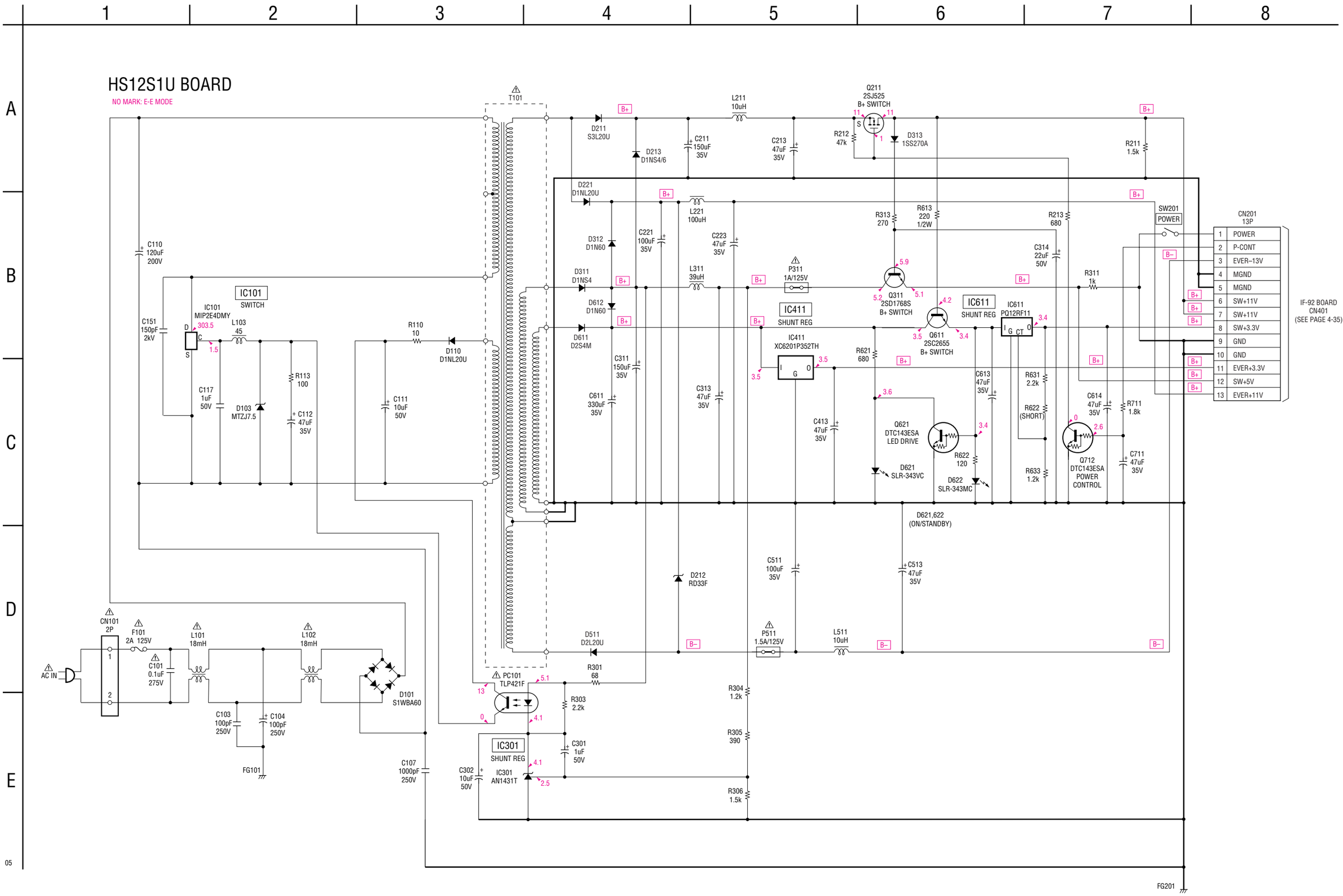
HS12S1U BOARD

CN101	A-1
CN201	B-4
D101	B-2
D103	A-2
D110	A-3
D211	A-4
D212	A-4
D213	A-4
D221	A-3
D311	A-4
D312	A-4
D313	B-5
D511	B-4
D611	A-4
D612	A-4
D621	A-5
D622	A-5
IC101	A-3
IC301	A-3
IC411	B-5
IC611	A-5
Q211	B-5
Q311	B-4
Q611	A-5
Q621	A-5
Q712	B-5



HS12S1U (SWITCHING REGULATOR) SCHEMATIC DIAGRAM **• See page 4-37 for printed wiring board.**

– Ref. No.: HS12S1U board; 5,000 series –



5-1. SYSTEM CONTROL PIN FUNCTION (MB-103 BOARD IC103)

Pin No.	Pin name	I/O	Function
1-5	HA17-HA21	O	Address bus A17-A21
6	HA22	-	Not used
7	WP	O	I2C EEPROM write protect output
8	XSACS	-	Not used
9	AVCC	-	Power supply (+3.3 V)
10	AVRH	-	Reference power supply (+3.3 V)
11	AVSS	-	Ground
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	S101 interrupt
16	INT0	I	AV DEC Interrupt input
17	INT1	I	ARP Interrupt input
18	INT2	I	SDSP Interrupt input
19	INT3	-	Not used
20	INT4	I	IF CON Interrupt input
21	INT5	-	Not used
22	INT6	-	Not used
23	INT7	-	Not used
24	VCC	-	Power supply (+3.3 V)
25	SI0	I	Serial bus 0 (data input)
26	SO0	O	Serial bus 0 (data output)
27	SC0	O	Serial bus 0 (clock output)
28	SI1	-	Not used
29	SO1	O	Serial bus 1 (data output)
30	SC1	O	Serial bus 1 (clock output)
31	SI2	I	Serial bus 2 (data input)
32	SO2	O	Serial bus 2 (data output)
33	DSENS	-	Not used
34	VSS	-	Ground
35	XRST	O	System reset signal output
36	XARPRST	O	WIDE Select signal output
37	RGBSEL	-	Not used
38	SDA	I/O	I2C data input/output

Pin No.	Pin name	I/O	Function
39	SCL	O	I2C clock output
40	TRM+	-	Not used
41	EUROV	-	Not used
42	EXT/DSEL	O	I/P select signal output
43	MD0	I	Input of mode select 0 (fixed at " H")
44	MD1	I	Input of mode select 1 (fixed at " L")
45	MD2	I	Input of mode select 2 (fixed at " L")
46	DREQ0	I	AV DEC DMA-REQ 0 input
47	DACK0	O	AV DEC DMA-ACK 0 output
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	AV DEC DMA-REQ 1 input
50	DACK1	O	AV DEC DMA-ACK 1 output
51	XIFCS	O	IF CON Chip select signal output
52	VSS	-	Ground
53	X1	O	Clock output (16.5 MHz)
54	X2	I	Clock input (16.5 MHz)
55	VCC	-	Power supply (+3.3 V)
56	CKSW1	-	Not used
57	OCSW1	-	Not used
58	CS0X	O	External ROM chip select signal output
59	CS1X	O	Extranal RAM chip select signal output
60	CS2X	O	AV DEC Chip select signal output
61	CS3X	O	AV DEC Chip select signal output
62	CS4X	O	ARP Chip select signal output
63	CS5X	O	SDSP Chip select signal output
64	VCCI	-	Power supply (+1.8 V)
65	CS6X	-	Not used
66	CS7X	-	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	I	Test terminal (fixed at "H")
69	BRQ	I	Test terminal (fixed at "L")
70	XRD	O	Read enable signal output
71	XWRH	O	High byte write enable signal output (16 bit and 8 bit)
72	XWRL	O	Lower byte write enable signal output

Pin No.	Pin name	I/O	Function
73	NMIX	I	Not used (fixed at “H”)
74	VCCI	-	Power supply (+1.8 V)
75	VSS	-	Ground
76	XFRRST	I	IF CON Reset signal input
77	CPUCK	O	CPU clock signal output
78	OCSW2	-	Not used
79	XDACS	O	DAC (2ch) chip select signal output
80	TRM–	-	Not used
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	Laser diode mute signal output
83	MA_MUTE	O	Audio mute signal output
84	SRAMWE	O	External RAM write enable signal output
85-92	HD0-HD7	I/O	Data bus D0-D7 (16 bit only)
93-100	HD8-HD15	I/O	Data bus D8-D15 (16 bit) , D0-D7 (8 bit)
101	VSS	-	Ground
102-109	HA0-HA7	O	Address bus A00-A07
110	VCC	-	Power supply (+3.3 V)
111-118	HA8-HA15	O	Address bus A08-A15
119	VSS	-	Ground
120	HA16	O	Address bus A16

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press the [TOP MENU], [CLEAR], [POWER] keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off.
To execute each function, select the desired menu and press its number on the remote commander.
To exit from the Test Mode, press the [I/⏻] key.

```
         Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emargency Hisory
5. Version Information
6. Video Level Adjustment
                Exit: Power Key
_
Model:DPX-16xxxx
Revision:x.xxx      Last Off: xx
```

Power Off Information Code List

00 : Primary Power Off
01 : Power Off Request from SYSTEM CONTROL
02 : Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
03 : IF CON Judged that SYSTEM CONTROL is Faulty
04 : Power Off from Diagnosis Mode of IF CON
05 : Forced Power Off by the User
06 : Power Off by Power Supply Voltage Monitor

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.
On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
          Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

All items continuous check
This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

         Diag All Check
          No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx


Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press [▶▶I] key to go to the next item, or [I◀◀] key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press [■] or [ENTER] key.
If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###



 3-3. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press [■] key to quit the diagnosis, or [I◀◀] key to repeat the same item where an error occurred, or [▶▶I] key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.
Indication of "–" in the submenu means the check is not supported with the model.
For example, if "5. Supply" is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
          No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
–
```

0. Quit
Quit the submenu and return to the main menu.

1. All
All submenu items continuous check.
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.
Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see "General Description of Checking Method" and "Check Items List".

General Description of Checking Method

2. Version
(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC106 or 107) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
8-bit data are added up to the ROM (IC106 or 107) address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

(2-6) Mount resistance confirmation check
Error 22: region code discord
Accordance between region codes, one is detected with model resistance and destination resistance, and the other is detected with region resistance, is check.
If an error is detected, the region code determined with region resistance is displayed at "write data" and the region code determined with model resistance and destination resistance is displayed at "read data".

3. Peripheral
(3-2) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-6) Venc Check
Data write → read, and accord check
Error 52: write and read data discord.
Accessing to the SYSCON may be defective.

(3-8) External RAM Check
Test data write → read, and accord check
Error 02: External RAM used for SYSCON is checked.

4. Servo
(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord
0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking. Also, OPT type "1 LASER" or "2 LASER" is displayed.

(4-3) Check is not supported.

(4-4) RF Amp Register Check
Date write → read and accord check
Error 13: RF Amp resister write, and read data discord.
After 0x01 is shifted to register which can read and write RF Amp for 8 bit operation, if write and read data are discord once, the check is performed unsuccessfully.
There may be a single piece of hardware is defective, mounted imperfect or not mounted.

5. Supply

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC301) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write → other address read discord check
Error 10: ARP ←→ RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###



 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC301) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1935 RAM
Data write → read, and accord check
Error 14: AVD RAM read data discord
The program code data stored in ROM (IC106 or 107) are copied to all areas of RAM (IC404, IC406) connected to the AVD (IC403) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 14, and the test is suspended.
During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1935 SP
ROM → AVD RAM → Video OUT
Error: Not detected.
The data including sub picture streams in ROM (IC106 or IC107) are transferred to the RAM (IC404, IC406) in AVD (IC403), and output as video signals from the AVD (IC403). Though OSD display becomes blank, the output of video signals continues until the key is pressed.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

(7-2) Color Bar
AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

8. Audio

(8-2) ARP → 1935
Error 15 : ARP → 1935 video NG
16 : ARP → 1935 audio NG

(8-3) Test Tone
Pink noise output
Error: not detected
Test tone is output, from only L and R2 channels of the model without DD output function, and from Ls and Rs of two channels of DD model.
After setting all outputs to ON, check for each channel is performed individually by pressing [▶▶I] to switch the output channel.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region
(2-6) M't Check

3) Peripheral
(3-2) EEPROM Check
(3-6) Venc Check
(3-8) External RAM Check

4) Servo
(4-2) Servo DSP Check
(4-3) ———— (function not support)
(4-4) RF Amp Register Check

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1935 RAM
(6-3) 1935 SP

7) Video
(7-2) Color Bar

8) Audio
(8-2) ARP → 1935
(8-3) Test Tone

Error Codes List

00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: RF Amp NG
14: SDRAM NG
15: ARP → 1935 video NG
16: ARP → 1935 audio NG
1A: System call error (function not supported)
1B: System call error (parameter error)
1C: System call error (illegal ID number)
20: System call error (time out)
22: Resistance incorrect mounting
52: Video Encoder W/R NG
55: External RAM W/R NG
90: Error occurred
91: User verification NG
92: Diagnosis cancelled.

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.

```
  ## Drive Auto Adjustment ##

        Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. LCD



                  Exit: RETURN
```

Normally, [0] is selected to adjust DVD (single layer), CD, DVD (dual layer) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.
The disc used for adjustment must be the one specified for adjustment.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select [0] and press the [ENTER] key. First , the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, 1. DVD-SL disc, 2. CD disc, and 3. DVD-DL disc are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. You can exit the adjustment by pressing the [■] button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

1. DVD-SL (single layer)

Select [1], insert DVD single layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. Sled Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Focus ON 0 with PI Level Musure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. EQ Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. RF Level Measure
21. Jitter Measure
22. Eep Copy Loop Filter Offset
23. All Servo Stop

2. CD

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Fcs ON 1 with PI Level Mesure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto focus Blance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. Eq Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. Copy Adjustment Data to LCD
21. RF Level Measure
22. Jitter Measure
23. All Servo Stop

3. DVD-DL (dual layer)

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Reset
2. Disc Check Memory DL
3. Set Disc Type DL
   DVD DL Layer 1 Adjust
4. Spdl Start
5. LD ON
6. Fcs ON 1 with PI Level Mesure
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Clva ON
10. Sled ON
11. Auto Focus Balance Adjust
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter Measure
    DVD DL Layer 0 Adjust
17. Focus Jump (L1 → L0)
18. Auto Track Offset Adjust L0
19. Tracking ON
20. Clva ON
21. Sled ON
22. Auto Focus Balance Adjust
23. Auto Focus Gain Adjust L0
24. Auto Focus Balance Adjust L0
25. Eq Boost Adjust L0
26. Auto Track Gain Adjust L0
27. Jitter Measure
28. All Servo Stop

4. LCD (SACD)

No adjustments, because the adjusted data of CD are reflected to LCD disc and the adjusted data of CD and DVD-DL are reflected to SACD (hybrid disc).

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
  ## Drive Manual Operation ##

        Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

                Exit: RETURN
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [■] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[I/⏻]	Power OFF
[■]	Servo stop
[⏏]	Stop+Eject/Loading
[↩ RETURN]	Return to Operation Menu or Test Mode Menu
[▶▶I], [I◀◀]	Transition between sub modes of menu
[1] to [9], [0]	Selection of menu items
Cursor [↓] / [↑]	Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
          Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check



0. Reset SLED TILT
```

On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.
The adjustment must be executed more than once after default data were written.
From this screen, you can go to another mode by pressing [▶▶I] or [I◀◀] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
          Disc Type
Disc Type
1. Disc Type Auto Check
2. DVD SL   12cm
3. DVD DL   12cm
4. CD       12cm
5. SACD     12cm
6. DVD SL   8cm
7. DVD DL   8cm
8. CD       8cm
9. LCD      8cm
0. Reset SLED TILT
                          EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
          Disc Type
1. Disc Type Auto Check
2. DVD SL     12cm
3. DVD DL     12cm
4. CD         12cm
5. SACD       12cm
6. DVD SL      8cm
7. DVD DL      8cm
8. CD          8cm
9. LCD         8cm
0. Reset SLED TILT
SA.------ SI.-- EMG.00
DVD SL 12cm
```

Display when DVD SL 12cm disc was selected

```
          Disc Type
1. Disc Type Auto Check
2. DVD SL     12cm
3. DVD DL     12cm
4. CD         12cm
5. SACD       12cm
6. DVD SL      8cm
7. DVD DL      8cm
8. CD          8cm
9. LCD         8cm
0. Reset SLED TILT
           TC. --:--:-- EMG.00
CD           12cm
```

Display when CD 12cm disc was selected

[0] Reset SLED TILT	Reset the Sled and Tilt to initial position.(This model does not have Tilt device, so reset only the Sled to initial position.)
[1] Disc Type Check	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
[2] to [9]	Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

```
         Servo Control
1. LD        Off R. Sled FWD
2. SP        Off L. Sled REV
3. Focus     Off
4. TRK.      Off
5. Sled      Off
6. CLVA      Off
7. FCS. Srch Off


0. Reset SLED TILT
       SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

[0] Reset SLED TILT	Reset the Sled and Tilt to initial position.(This model does not have Tilt device, so reset only the Sled to initial position.)
[1] LD	Turn ON/OFF the laser.
[2] SP	Turn ON/OFF the spindle.
[3] Focus	Search the focus and turn on the focus.
[4] TRK	Turn ON/OFF the tracking servo.
[5] Sled	Turn ON/OFF the sled servo. If PLL is not locked (or can not be locked), the sled servo does not be turned ON. (Indication remains as OFF)
[6] CLVA	Turn ON/OFF normal servo of spindle servo.
[7] FCS. Srch	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
[→] Sled FWD	Move the sled outward. Perform this operation with the tracking servo turned off.
[←] Sled REV	Move the sled inward. Perform this operation with the tracking servo turned off.

3. Track/Layer Jump

```
      Tracking/Layer Jump
1. 1Tj FWD    R. Fj (L1 → L0)
2. 1Tj REV    L. Fj (L0 → L1)
3. 2Tj FWD    U. Lj (L1 → L0)
4. 2Tj REV    D. Lj (L0 → L1)
5. NTj FWD
6. NTj REV
7. 500Tj FWD
8. 500Tj REV
9. 10k/20k FWD
0. 10k/20k REV
       SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

[1] 1Tj FWD	1-track jump forward.
[2] 1Tj REV	1-track jump reverse.
[3] 2Tj FWD	2-track jump forward.
[4] 2Tj REV	2-track jump reverse.
[5] NTj FWD	N-track jump forward.
[6] NTj REV	N-track jump reverse.
[7] 500Tj FWD	Fine search forward.
[8] 500Tj REV	Fine search reverse.
[9] 10k/20k FWD	Direct search forward.
[0] 10k/20k REV	Direct search reverse.

– The following commands are valid for DVD-DL disc only –

[→] Fj (L1 → L0)	Focus jump forward. (Trk/Sled Servo OFF)

[←] Fj (L0 → L1)	Focus jump reverse. (Trk/Sled Servo OFF)
[↑] Lj (L1 → L0)	Layer jump forward. (Trk/Sled Servo ON)
[↓] Lj (L0 → L1)	Layer jump reverse. (Trk/Sled Servo ON)

4. Manual Adjustment

```
   Manual Adjustment:Up/Down
1. TRK. Offset
2. Focus Gain
3. TRK. Gain
4. Focus Offset
5. Focus Balance
6. L.F. Offset
7. Analog FRSW
8. PLL Dac Gain
9. EQ BOOST
0. GD ADJ
Adjustment: Up/Down
      SA. ------ SI. -- EMG. 00
DVD SL 12cm            Jitter FF
```

On this screen, each item can be adjusted manually. Select the desired number [1] to [0] from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with [↑] key or [↓] key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

[1] TRK. Offset	Adjusts tracking offset.
[2] Focus Gain	Adjusts focus gain.
[3] TRK. Gain	Adjusts track gain.
[4] Focus Offset	Adjusts focus offset.
[5] Focus Balance	Adjusts focus balance.
[6] L.F. Offset	Adjusts loop filter offset.
[7] Analog FRSW	Sets the shifting switch for analog feedback circuit.
[8] PLL Dac Gain	Adjusts PLL D/A converter gain.
[9] EQ BOOST	Adjusts amount of boost of equalizer.
[0] GD ADJ	Adjusts amount of group delay

5. Auto Adjustment

```
        Auto Adjustment
1. Auto TRK. Offset
2. Auto Focus Balance
3. Auto Focus Offset
4. Auto Focus Gain
5. Auto TRK. Gain
6. Auto EQ
7. Auto L.F. Offset
8. Auto Group Delay


SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

[1] Auto TRK. Offset	Adjusts tracking offset.
[2] Auto Focus Balance	Adjusts focus balance.
[3] Auto Focus Offset	Adjusts focus offset.
[4] Auto Focus Gain	Adjusts focus gain.
[5] Auto TRK. Gain	Adjusts track gain.
[6] Auto EQ	
[7] Auto L.F. Offset	Adjusts loop filter offset.
[8] Auto Group Delay	

6. Memory Check

Display images are shown as follows, and all three screens are able to switch.

```
EEPROM DATA 1          -- DL --
            CD LCD   SL  L0  L1
Focus Gain   xx xx   xx  xx  xx
TRK. Gain    xx xx   xx  xx  xx
FCS Balnce   xx xx   xx  xx  xx
Focus Bias   xx xx   xx  xx  xx
TRV Offset   xx xx   xx  xx  xx
L.F. Offset  xx xx   xx  xx  xx
EQ. Boost    xx xx   xx  xx  xx
_
UP   : Last Data
DOWN : Next Data
CLEAR: Default Set     page.1/3
```

```
EEPROM DATA 2          -- DL --
            CD LCD   SL  L0  L1
RF Jitter    xx --   xx  xx  xx
RF Level     xx --   xx  --  --
FE Level     xx --   xx  --  --
FE Balance   xx --   xx  --  --
TRV.Level    xx --   xx  --  --
TE Gain      xx xx   --  --  --
PI Level     xx --   xx  xx  --
_
UP   : PREV Data
DOWN : Next Data
CLEAR: Default Set     page.2/3
```

```
EEPROM DATA 3          -- DL --
             CD LCD   SL  L0  L1
Analog FRSW   xx xx    xx  xx  xx
PLL Dac Gain  xx xx    xx  xx  xx
Mirror Time   xx xx    xx  xx  xx

_  THR A&L    xx xx  xx/xx xx  xx
UP    : PREV Data
DOWN  : First Data
CLEAR : Default Set      page.3/3
```

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the [CLEAR] key, but be careful that they are not recoverable after initialization.
Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.
Data of "THR A & L" on page 3/3 can not be changed if default set is done.

6-6. MECHA AGING

```
      ### Mecha Aging ###



Press OPEN key



Abort: STOP key
```

On the Test Mode Menu screen, selecting [3] executes the aging of mechanism. First, open the tray and load a disc. Press the [▷] key, and the aging will start. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the [■] key. After the operation has stopped, unload the disc and press again the [■] key or the [↶ RETURN] key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
      ### EMG. History ###

Laser Hours      CD   xxhxxm
                 DVD  xxhxxm

 1. 00 00 00 00 00 00 00 00
    00 00 00 00 00 00 00 00

 2. 00 00 00 00 00 00 00 00
    00 00 00 00 00 00 00 00

Select: 1-9      Scroll: UP/DOWN
(1: Last EMG.)   Exit: RETURN
```

On the Test Mode Menu screen, selecting [4] displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with [↑] key or [↓] key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

◎ Clearing laser hours
Press [DISPLAY] and [CLEAR] keys in this order.
Both CD and DVD data are cleared.

◎ Clearing emergency history
Press [TOP MENU] and [CLEAR] keys in this order.

◎ Initializing set up data
Press [MENU] and [CLEAR] keys in this order.
The data have been initialized when "Set Up Initialized" message is displayed. The EMG. History screen will be restored soon.

6-8. VERSION INFORMATION

```
   ### Version Infomation ###

IF con.      Ver.x.xxx(xxxx)
             Group    xx

SYScon.      Ver.x.xxx(xxxx)
             Model    xx
             Region   0x

 Servo DSP Ver: x.xxx
 AVD ucode Ver: xxxxxxxx
 OPT TYPE : x LASER
Exit : RETURN
```

The ROM version, region code, OPT type, etc. are displayed if [5] is selected in the Test Mode Menu.
The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

Note : After down loading ROM data, sometimes it happens that checksum is not the same as that of ROM data which has been down loaded. In such a case, go back to the menu and select "0. Syscon Diagnosis", then select "1. All" in "2. Version". If the result of this operation does not give an agreement, it must be either Down Load error or ROM error.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. IF-92 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.
1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   Grid check
   Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.
1. The routine that monitors +3.3 V (P-CONT) of MB-103 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

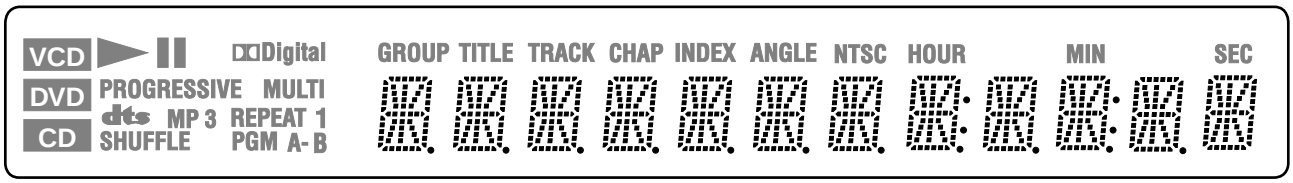
2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON (IC404) was reset, the input to 10pin (SELF CHECK) is judged and if "Low" is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-103 and AV-63 boards are not connected). While pressing the [■] key on the main unit with the IF CON in STANDBY mode, enter [↶ RETURN] → [DISPLAY] (or [SET UP]) on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

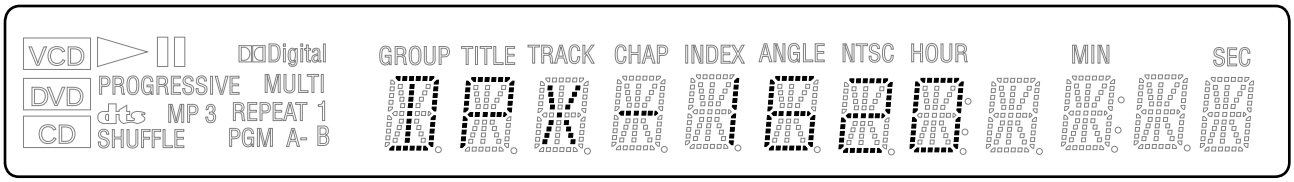
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

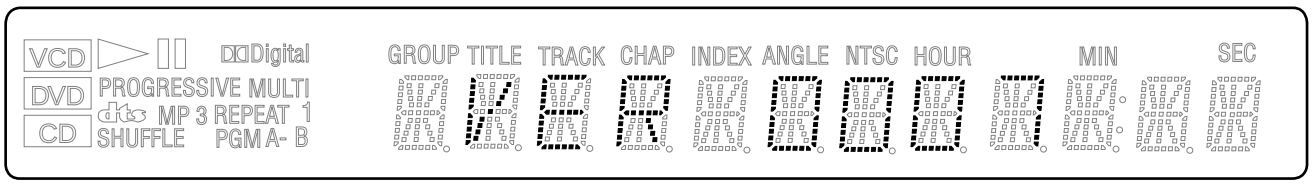
(1) FLD and LED all ON (for 5 seconds)



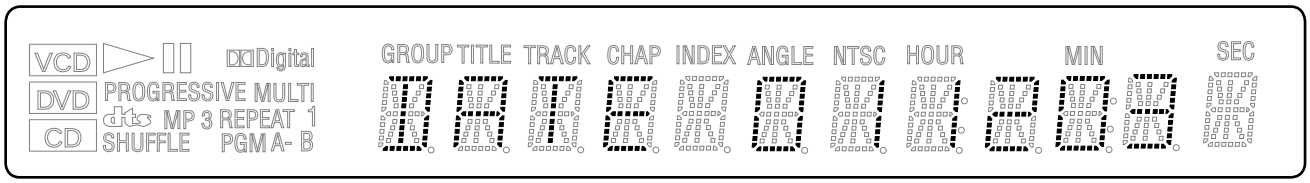
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)				
	Pin ㉝ (CURSOR)	Pin ㉞ (O/C)	Pin ㉟ (PLAY)	Pin ㊱ (DISPLAY)	Pin ㊲ (POWER)
0 – 0.2	ENTER	OPNE/CLOSE	PLAY	STOP	POWER
0.6 – 0.82	DOWN	PREVIOUS	–	DISPLAY	TVS
1.16 – 1.47	LEFT	PAUSE	–	MENU	PVEQ
1.8 – 2.12	UP	NEXT	–	RETURN	–
2.48 – 2.7	RIGHT	–	–	TOP MENU	–
3.3	–	–	–	–	–

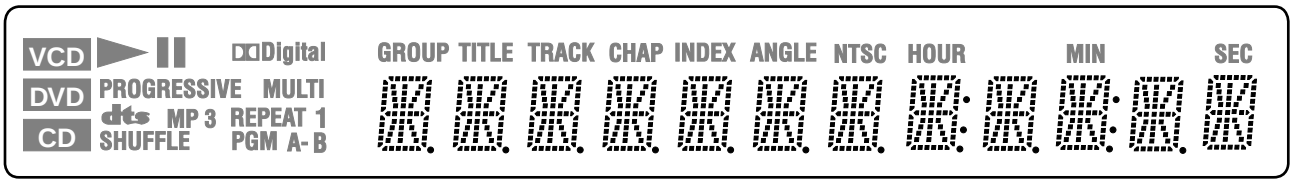
2-3-1. FLD and LED All ON

2-3-1-1. Transition Keys in Self Check Mode

- [■] key and [⏏] key on the main unit
- [←] key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.
Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

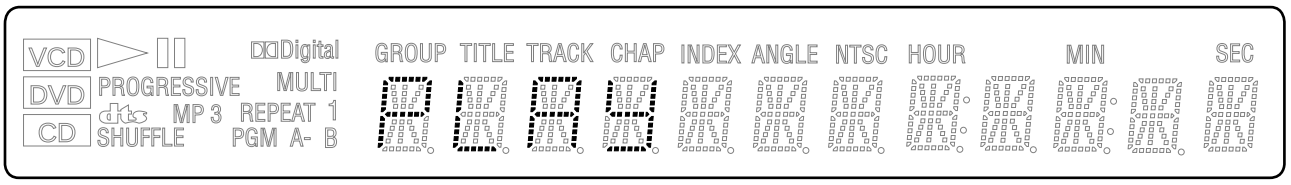
2-3-2-1. Transition Keys in Self Check Mode

- Keys on main unit except keys transited in self check

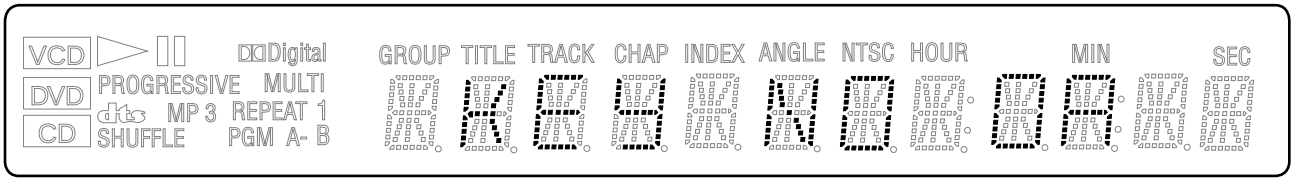
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the [DISPLAY] key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

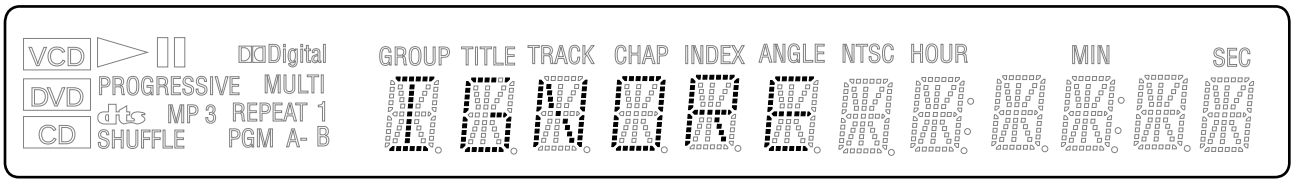
FLD display (at input of [▷] key on the main unit)



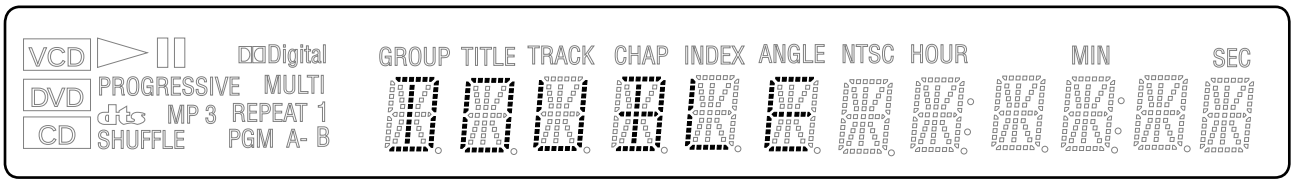
Key code display (at input of [▷] key, Key code: 0Ah)



At input of faulty voltage



When two keys are pressed



2-3-3. Remote Commander Key Name Display and Key Code Display

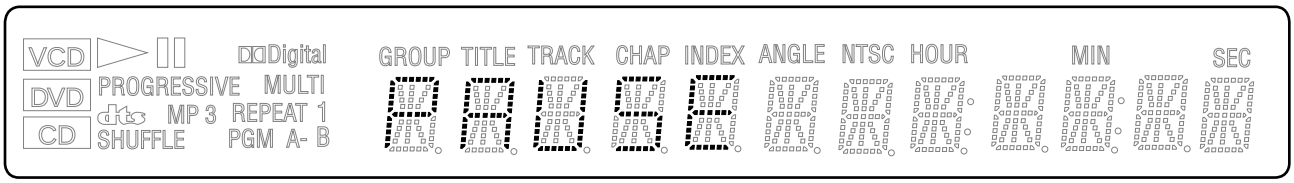
2-3-3-1. Transition Keys in Self Check Mode

- Remote commander keys except keys transited in self check

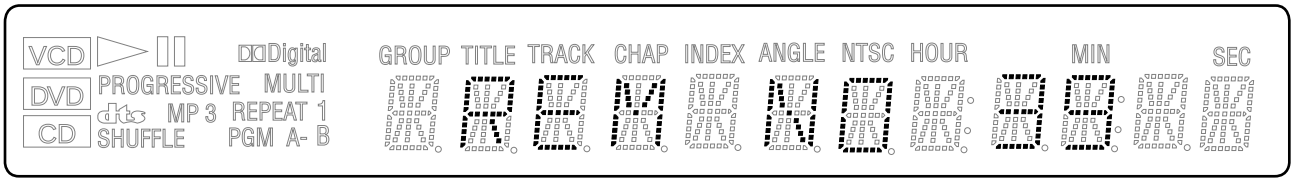
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the [DISPLAY] key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of [❚❚] key)



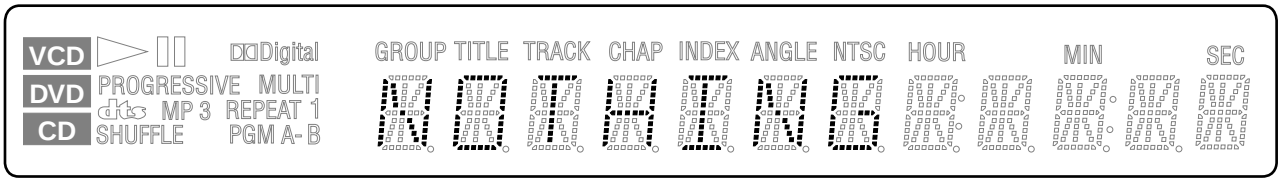
Remote commander key code display (at input of [❚❚] key, Key code: 39h)



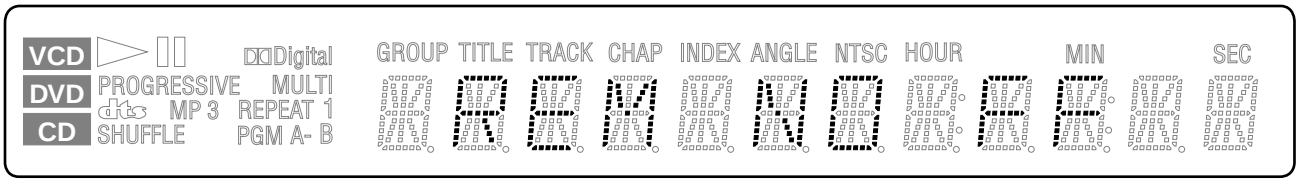
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

Communication error display (at no key input)



Communication error display (at code display without input of the remote commander)



2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

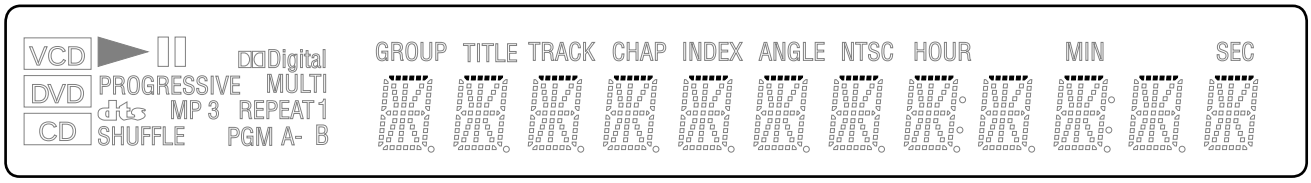
2-3-5-1. Transition Keys in Self Check Mode

- [→] on the main unit and the remote commander
- SHUTTLE on the remote commander during Anode Test display
  (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

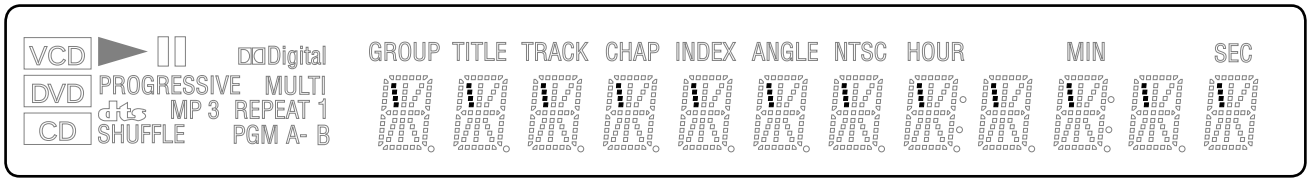
2-3-5-2. Operation and Display

The Self Check mode transits to this mode when [→] key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each segment turns on individually.

Display at the start of Anode Test



↓ (Input in CW direction)



2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

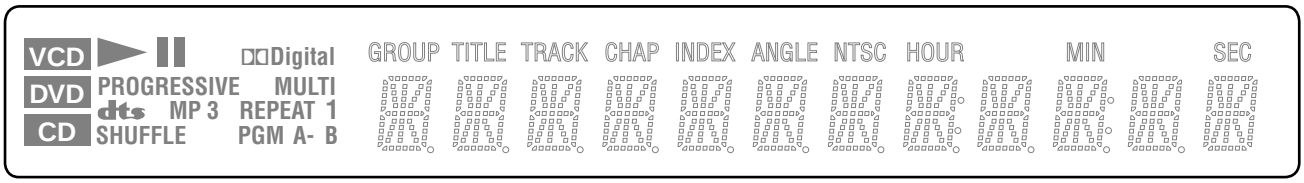
2-3-6-1. Transition Keys in Self Check Mode

- [↑] on the main unit and the remote commander
- SHUTTLE on the remote commander during Grid Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

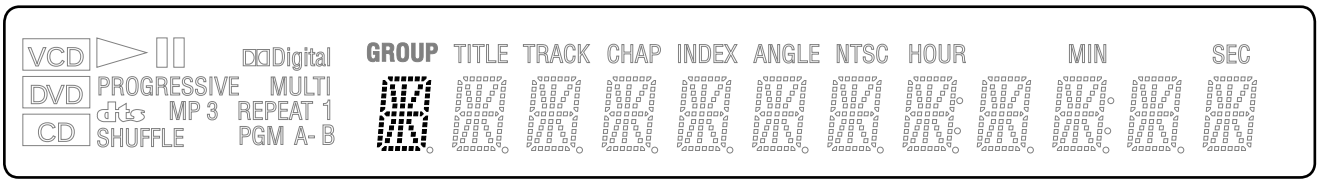
2-3-6-2. Operation and Display

The Self Check mode transits to this mode when [↑] key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each grid turns on individually.

Display at the start of Grid Test



↓ (Input in CW direction)



2-3-7. LED Test Display

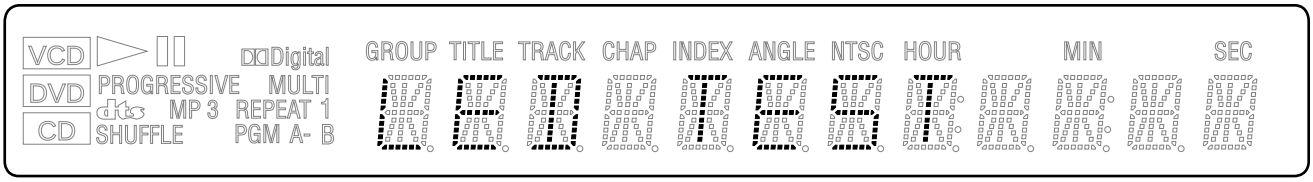
2-3-7-1. Transition Keys in Self Check Mode

- [↓] on the main unit and the remote commander
- SHUTTLE on the remote commander during LED Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

FLD display during LED Test



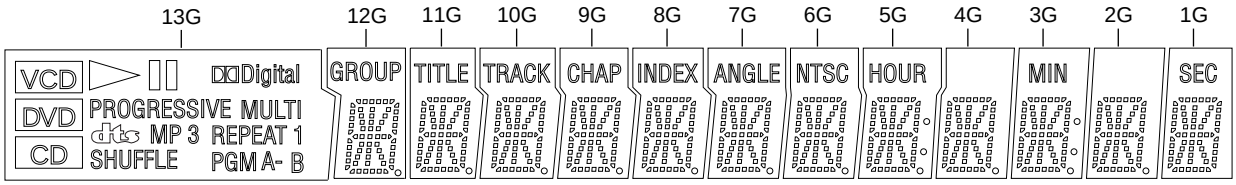
2-3-8. Beep Sound Test

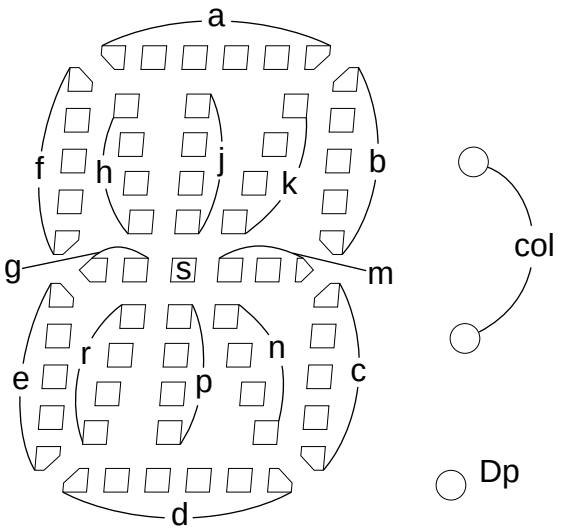
2-3-8-1. Transition Keys in Self Check Mode

- Input of a key on main unit

2-3-8-2. Operation and Display

In the Self Check mode, each time a key on the main unit is entered, a beep sound of 1kHz (100ms) is generated.





(12G~1G)

ANODE CONNECTION

	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	▷	a	a	a	a	a	a	a	a	a	a	a	a
P2	▯▯	h	h	h	h	h	h	h	h	h	h	h	h
P3	—	j	j	j	j	j	j	j	j	j	j	j	j
P4	Digital	k	k	k	k	k	k	k	k	k	k	k	k
P5	PROGRESSIVE	b	b	b	b	b	b	b	b	b	b	b	b
P6	—	f	f	f	f	f	f	f	f	f	f	f	f
P7	MULTI	m	m	m	m	m	m	m	m	m	m	m	m
P8	dts	s	s	s	s	s	s	s	s	s	s	s	s
P9	MP 3	g	g	g	g	g	g	g	g	g	g	g	g
P10	REPEAT	e	e	e	e	e	e	e	e	e	e	e	e
P11	1	n	n	n	n	n	n	n	n	n	n	n	n
P12	SHUFFLE	p	p	p	p	p	p	p	p	p	p	p	p
P13	PGM	r	r	r	r	r	r	r	r	r	r	r	r
P14	A-	c	c	c	c	c	c	c	c	c	c	c	c
P15	B	d	d	d	d	d	d	d	d	d	d	d	d
P16	VCD	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	-
P17	DVD	-	-	-	-	-	-	-	col	-	col	-	-
P18	CD	GROUP	TITLE	TRACK	CHAP	INDEX	ANGLE	NTSC	HOUR	-	MIN	-	SEC

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the unit is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-103 board and AV-63 board, and with the SELF CHECK (pin ⑩) of IF CON (IC404) on the IF-92 board kept in low state, supply AC, and the IF CON self-diagnosis mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-103 board)

1. The test mode menu is not displayed.

1-1. Board visual check

Check that the ICs of SYSCON (IC104), ROM (IC106 or IC107), AVD (IC403), ARP & SERVO (IC301) are working correctly.
Check that outside appearance of the ICs is normal.
Check that IC pins are not short-circuited.
Check that there is no soldering error.
Check that outside appearance of the capacitors and resistors is normal.

1-2. Power supply voltage check

Check the power voltage of the power connector (CN102).
Check the power voltage of SYSCON (IC104).
Check the power voltage of ROM (IC106 or IC107).
Check the power voltage of AVD (IC403).
Check the power voltage of ARP & SERVO (IC301).
If the power voltage has any abnormality ⟶
Check that the power supply lines are not shorted.
Check that there is no soldering error.
If any abnormality cannot be found still ⟶
Check that each IC is working normally.

1-3. Clock signal check

Measure the clock signal frequency at CPUCK (CL101) of SYSCON (IC104) with an oscilloscope.
If the 8.25 MHz signal appears. ⟶ Check the machine according to section 1-3-1
If the 33 MHz signal appears. ⟶ Check the machine according to section 1-3-2.
If other frequencies are output.
R110 and R113 have defective soldering, X101 crystal oscillator is defective.
If the measurement point is fixed to either "H" or "L". ⟶
Observe XFRRST (pin-⑯) of SYSCON (IC104) with an oscilloscope.
If the measurement point is "L", check the following items.
If the IC has defective soldering, if the IC is short-circuited.
If the measurement point is "H",
⟶ Component X101 or SYSCON (IC104) is defective.

1-3-1. When the 8.25 MHz signal appears at CPUCK

• Check the XRD, XWRH and CS0X signal.
Observe XRD (pin-⑦⓪), XWRH (pin-⑦①), and CS0X (pin-⑤⑧) of SYSCON (IC104) with an oscilloscope.
If these pins are fixed to either "L" (0V) or "H" (3.3V), or if these pins stay in the center voltage, check the followings.
Check if the signal line does not have the defective soldering.
Check if the signal line is short-circuited with other signal lines.
If you cannot find any problem ⟶ SYSCON (IC104) is defective.

• HA [0 to 21] signal and HD [0 to 15] signal check
Observe HA [0 to 21] (pins-⑩② to ⑩⑨, ⑪① to ⑪⑧, ⑫⓪, ① to ⑤) of SYSCON (IC104) and HD [0 to 15] (pins-⑧⑤ to ⑩⓪) with an oscilloscope.
If these pins are fixed to either "L" (0V) or "H" (3.3V), or if the HA pin stays in the center voltage, check the followings. (HD stays in the center voltage when it is normal.)
⟶ Check if the signal line does not have the defective soldering, or is short-circuited with other signal line or SYSCON (IC104) is defective.

• Reset signal check
Check if XFRRST (pin-⑯) of SYSCON (IC104) normal or not.
The signal starts up at the same time as Vcc ⟶ Defective soldering.

If the trouble does not apply to any of the above-described phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

1-3-2. When the 33 MHz signal appears at CPUCK

• WAIT signal check

Observe XWAIT (pin-⑥⑦) of SYSCON (IC104) with an oscilloscope.

If it is fixed to "L" (0V). ⟶ Observe CS2X to CS5X (pins-⑥⓪ to ⑥③).

If CS2X or CS3X is "L". ⟶ AVD (IC403) has defective soldering or AVD is defective.

If CS4x or CS5X is "L". ⟶ ARP & SERVO (IC301) has defective soldering or ARP & SERVO is defective.

If any one of the above is not "L". ⟶ XWAIT or CSnX is short-circuited or has the defective soldering or AVD (IC403) is defective or ARP & SERVO (IC301) is defective.

Center voltage ⟶ The XWAIT line has defective soldering or is short-circuited or AVD (IC403) is defective or ARP & SERVO (IC301) is defective or SYSCON (IC104) is defective.

• CSnX signal check

Observe CS0X to CS5X (pins-⑤⑧ to ⑥③) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or if to center voltage ⟶ Check that the ICs do not have the defective soldering or is short-circuited with the other signal lines or SYSCON (IC104) is defective.

CS0X: ROM (IC106 or IC107)
CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble symptom does not apply to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

2. Test mode menu is displayed but the machine stops when menu is selected

2-1. AVD (IC403) check

Observe SDCLKO (pin-⑫⑦) of AVD (IC403) with an oscilloscope.

95 MHz ⟶ No problem

27 MHz ⟶ Observe the XRST, HA, HD, XRD, XWRH INT and CS signal waveform at the respective pins of AVDEC, AVD (IC403) is defective.

If the signal is other than the above frequencies ⟶ AVD (IC403) 27MHz signal line (CLKI (pin-⑮⑧), SCLKIN (pin-⑯⓪)) is short-circuited, IC mount is defective, AVD (IC403) is defective, PLL (IC103) is defective.

2-2. INT signal check

Observe INT0 to 2 (pins-⑯ to ⑱) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or fixed to the center voltage ⟶ Check that the ICs do not have the defective soldering, or are short-circuited, SYSCON (IC104) is defective, or the following ICs are not defective.

INT0: AVD (IC403)
INT1, INT2: ARP & SERVO (IC301)

2-3. If any abnormality cannot be confirmed by the above-described checks, check the CS signal that is currently output.

The CS signal other than CS0X is being output. ⟶ IC mount is defective or the IC is defective depending on the moving CS signal.

CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble is not applicable to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

3. If the message "SDSP No Ack" appears after the menu is displayed.

3-1. ARP & SERVO clock signal check

Check frequency of CLKIN (pin-⑮⓪)

33 MHz ⟶ Normal

Frequency other than 33 MHz ⟶ CLKIN is short-circuited or defective soldering or PLL (IC103) is defective or ARP & SERVO (IC301) is defective

3-2. ARP & SERVO (IC301) PLL oscillation check

Observe PLCKO (pin-⑧⑦) of ARP & SERVO (IC301) with an oscilloscope.

If the pin is fixed to either "L" (0V) or "H" (3.3V).

If XRST if fixed to "L". XRST has the defective soldering, In all other cases. ARP & SERVO (IC301) is defective

If it is oscillating.

HA [0 to 7] are HD [8 to 15] are short-circuited, check XSDSPIT and XSDSPCS or ARP & SERVO (IC301) is defective.

4. If trouble occurs at the specific item of the "Diag All Check".

IC mount of the NG item is defective or IC is defective.

5. Picture and audio are not output.

Check connection of CN601

Check for the defective connection of flat cable and check of damage of the flat cable.

6. Picture is output but audio is not output.

Check the audio data output (at pins-㉔, ㉘, and ㉙) of AVD (IC403)

The audio data is not output. ⟶ AVD (IC403) or audio DAC (IC601) mount is defective or power supply is defective or AVD (IC403) or audio DAC (IC601) is defective.

PLL (IC103) 512fs output check

If the frequency or waveform has abnormality. ⟶ The signal line has defective soldering or the signal line is short-circuited with other signal lines or PLL (IC103) is defective.

7. Audio is output but picture is not output.

Observe pins-㊲, ㊳, ㊴, ㊷, ㊸ and ㊹ of VDAC (IC504) with an oscilloscope.

If the analog signal is not output. ⟶ The signal line has the defective soldering or is short-circuited or parts are defective or VDAC (IC504) is defective.

6-11-3. Drive Auto Adjustment stops due to error.

The ARP & SERVO (IC301) analog circuit of MB-103 board is defective or RF-Amp (IC201) or M-Driver (IC202) peripheral circuit is defective or optical pickup block is defective or flat cable connection is defective

6-11-4. The product itself is defective.

• If MB103 does not have any problem,

The board other than MB-103 board is defective or connection is defective or optical pickup block is defective or mechanism deck is defective

1. Power LED does not light in Red when the AC power is turned on.

Check the EVER –13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage of the power supply block CN201.

If voltage is abnormal. ⟶ The power supply block is defective.

2. Power LED does not light in green after transmitting the POWER on command. It remains lighting in red (in the STANDBY mode).

2-1. Check the EVER -13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage at CN201 of the power supply block/

If voltage is abnormal. ⟶ The power supply block is defective.

2-2. Check if the fuse on the IF board has blown of not.

If the fuse has blown ⟶ Replace the fuse.

2-3. Check the P-CONT (pin-②) at CN401 of the IF-92 board when the POWER button is pressed.

If it remains at "L",

⟶ The signal line has the defective soldering or it is short-circuited with other signal lines or capacitor or resistor is defective or IFCON is defective or connection between the power supply block and the IF-92 board is defective, or connector installation is defective, or the power supply block is defective.

2-4. Check if the button is kept depressed in the IFCON self mode.

If the button is kept depressed. ⟶ The front panel is defective, or IF-92 board is defective.

2-5. Check PONCHK (pin-㉚) of IFCON (IC404) on the IF-92 board.

If it is 0.5 V or more. ⟶ The power supply is defective, or IF-92 board is defective.

3. Power LED becomes red (STANDBY mode) in at once through Power LED lights in Green once when the POWER button is pressed.

3-1. Check CN201 voltage of the power supply block when the LED lights in green.

If voltage is abnormal. ⟶ The power supply block is defective, or the IF-92 board is defective, or MB103 is defective

3-2. Check XFRRST (pin-⑧) at CN101 on the MB-103 board.

If it is fixed to "L". ⟶ The signal line has defective soldering, or is short-circuited with other signal lines, or parts are defective.

3-3. Check IFBSY (pin-⑤), XIFCS (pin-⑥), SI0 (pin-④), SO0 (pin-①) and SC0 (pin-③) at CN101

If they are fixed to "H" or "L".

⟶ The signal line has defective soldering, or is short-circuited with other signal line, or parts are defective, or SYSCON (IC104) is defective

If they change between "L/H".

Connector installation is defective, or the IF-92 board is defective, or SYSCON (IC104) is defective.

If they stay in the center voltage.

Poor connection of flexible wiring board such as it is inserted in an angle diagonally, or defective soldering, or is short-circuited with other signal line.

3-4. Check PONCHK (pin-㉚) of IFCON (IC404) on the IF-92 board.

If rise-up time from 0.5 V to 1.5 V or more takes longer time, or it does not exceed 1.5 V or more. ⟶ The IF board is defective.

4. The LED lights in green but the FL display does not light when the POWER button is pressed.

Connection between the power supply block and the IF-92 board is defective, or connector installation is defective, or the IF-92 board is defective.

5. Both picture and audio are not output.

Connection between the power supply block and the IF-92 board is defective, or connection between the IF-92 board and the AV-63 board is defective, or connection between the AV-63 board and the MB-103 board is defective, or connector installation is defective, or AV-63 board is defective.

6. Picture is not normal. (Block noise or others appear.)

The MB-103 board AVD (IC403) or SDRAM (IC404, IC405) is defective, or ARP & SERVO (IC301) is defective.

SECTION 7
ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-6. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes.
Use the reference disc for PAL for check, and use the reference disc for NTSC for adjustment.

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D145A)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer) (NTSC)
   HLX-503 (J-6090-069-A) (single layer) (NTSC)
   HLX-504 (J-6090-088-A) (single layer) (NTSC)
   HLX-505 (J-6090-089-A) (dual layer) (NTSC)
   HLX-506 (J-6090-077-A) (single layer) (PAL)
   HLX-507 (J-6090-078-A)(dual layer) (PAL)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
8) Extention Cable (J-6090-107-A)

7-1. POWER SUPPLY CHECK

1. HS12S1U Board

Mode	E-E
Instrument	Digital voltmeter
EVER +3.3 V Check	
Test point	CN201 pin ⑪
Specification	3.5 ± 0.2 Vdc
SW +3.3 V Check	
Test point	CN201 pin ⑧
Specification	3.3 ± 0.2 Vdc
+5 V Check	
Test point	CN201 pin ⑫
Specification	5.0 ± 0.3 Vdc
SW +11 V Check	
Test point	CN201 pin ⑥, ⑦
Specification	11.0 ± 1.0 Vdc
EVER +11 V Check	
Test point	CN201 pin ⑬
Specification	11.0 ± 1.0 Vdc
EVER –13 V Check	
Test point	CN201 pin ③
Specification	–13.0 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

ⓘ Caution

Never touch the heat sink that is the primary part. It is feared that you may get an electric shock.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-103 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV501
Specification	1.00 $^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV501 to attain 1.00 $^{+0.04}_{-0.02}$ Vp-p.

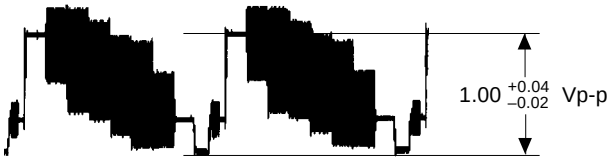


Figure 7-1

2. Progressive Video Output Level Adjustment (MB-103 BOARD)

<Purpose>

This adjustments progressive video output. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV502
Specification	1.00 $^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

1) In the test mode initial menu "7" Prog Level Adjustment, set so that color bars are generated.
2) Adjust the RV502 to attain 1.00 $^{+0.04}_{-0.02}$ Vp-p

Figure 7-2

3. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.00 ± 0.05 Vp-p.

Figure 7-3

4. Checking S Video Output S-C

<Purpose>

This checks whether the S-C satisfies the NTSC Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A = 286 ± 30 mVp-p (NTSC)

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-C burst is "A".

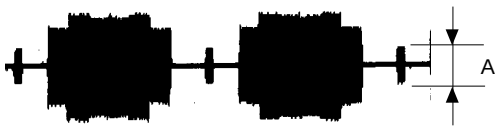


Figure 7-4

5. Checking Component Video Output Y

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the Y level is 1.00 ± 0.05 Vp-p.

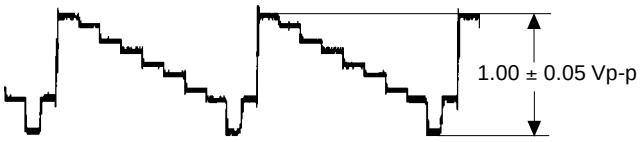


Figure 7-5

6. Checking Component Video Output B-Y

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P_B) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	648 ± 50 mVp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the B-Y level is 700 ± 50 mVp-p.

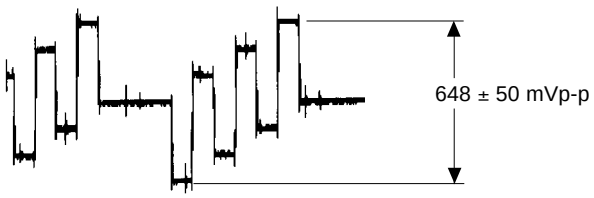


Figure 7-6

7. Checking Component Video Output R-Y

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P_R) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	648 ± 50 mVp-p

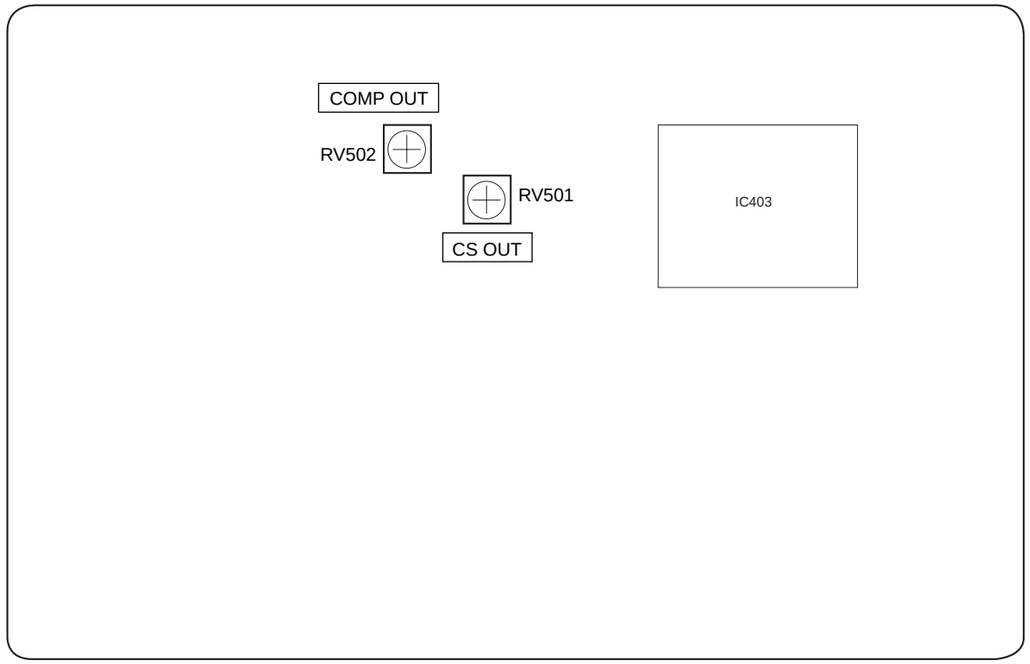
Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the R-Y level is 700 ± 50 mVp-p.

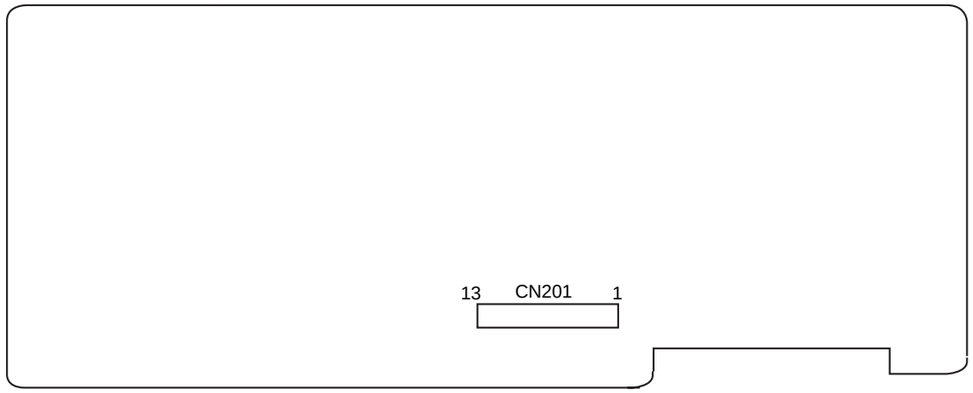
Figure 7-7

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-103 BOARD (SIDE A)



HS12S1U BOARD (SIDE A)



SECTION 8
REPAIR PARTS LIST

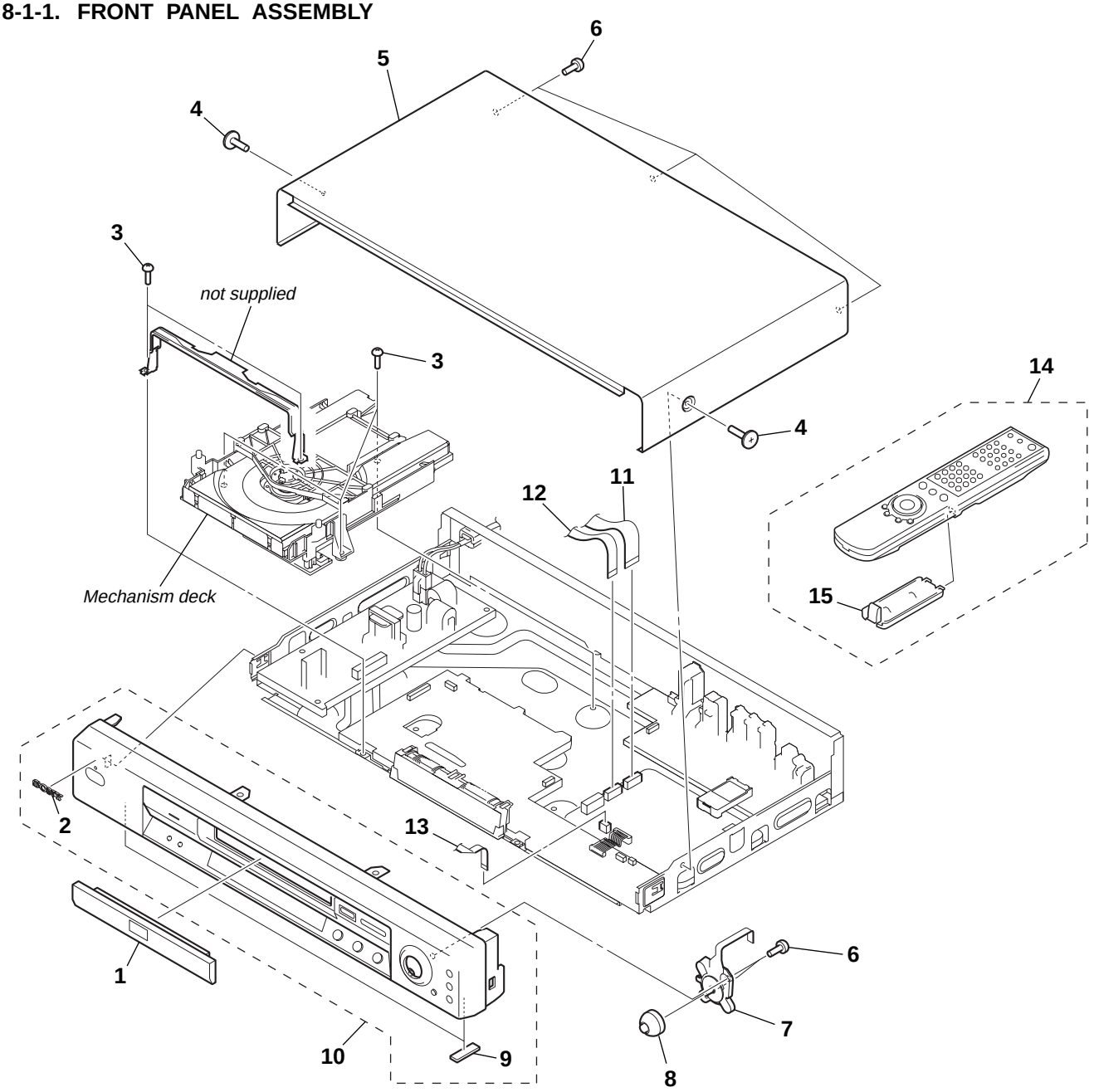
8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

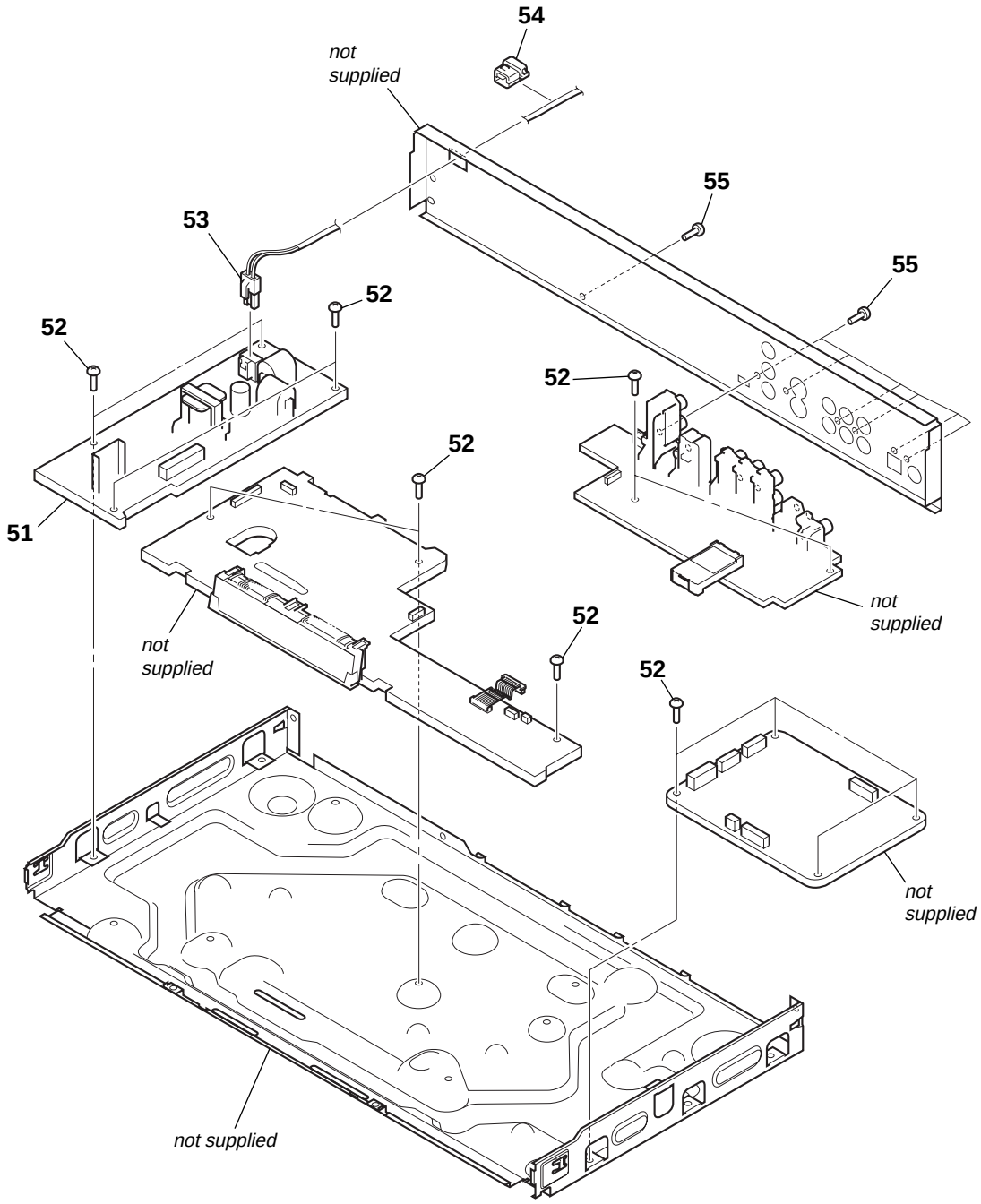
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. FRONT PANEL ASSEMBLY



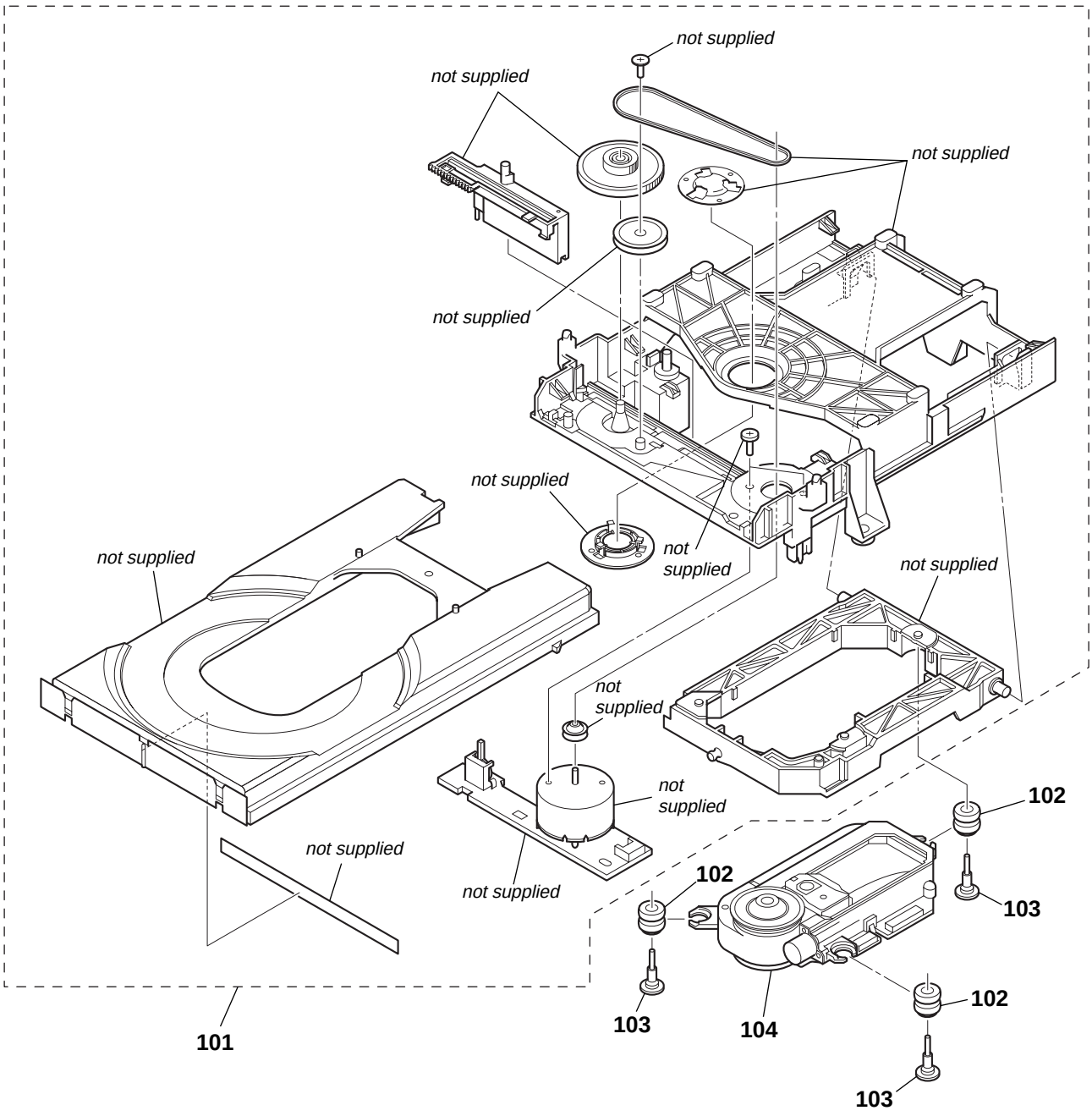
Ref. No.	Part No.	Description	Remark
1	X-3952-392-1	COVER ASSY, TRAY	
2	3-066-225-11	SONY BADGE (5-A)	
3	3-970-608-01	SUMITITE (B3), +BV	
4	3-070-883-11	SCREW, TAPPING	
5	3-073-832-31	CASE	
6	3-970-608-51	SUMITITE (B3), +BV	
7	1-786-131-11	SWITCH, TACTILE	
8	3-073-491-01	KNOB, CURSOR	
9	3-059-349-11	LEG CUSHION	
10	X-3952-245-1	PANEL ASSY, FRONT	
11	1-757-693-11	CABLE, FLEXIBLE FLAT (FMO-001)	
12	1-757-694-11	CABLE, FLEXIBLE FLAT (FMO-002)	
13	1-757-697-11	CABLE, FLEXIBLE FLAT (FMM-035)	
14	1-477-211-11	REMOTE COMMANDER (RMT-D145A)	
15	3-071-119-11	CASE, BATTERY (for RMT-D145A)	

8-1-2. CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
⚠*51	1-468-650-11	POWER BLOCK (HS12S1U)	
52	3-970-608-01	SUMITITE (B3), +BVS	
⚠ 53	1-783-531-31	CORD, POWER	
54	3-073-182-02	BUSHING, CODE	
55	3-970-608-51	SUMITITE (B3), +BV	

8-1-3. MECHANISM DECK ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	A-6060-556-A	LOADING ASSY (T)	
102	3-053-847-11	INSULATOR	
103	3-067-344-01	INSULATOR SCREW	
⚠104	A-6062-709-A	KHM-270AAA SERVICE ASSY	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (HS12S1U) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
		AV-63 BOARD, COMPLETE			
		**********			
					(Ref. No. 1,000 Series)
		< CAPACITOR >			
C101	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C102	1-126-947-11	ELECT	47uF	20%	16V
C103	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C109	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C110	1-126-947-11	ELECT	47uF	20%	16V
C111	1-126-947-11	ELECT	47uF	20%	16V
C112	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C113	1-126-947-11	ELECT	47uF	20%	16V
C114	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C126	1-126-947-11	ELECT	47uF	20%	16V
C201	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C202	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C203	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C204	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C205	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C206	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-126-960-11	ELECT	1uF	20%	50V
C222	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C223	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C224	1-126-947-11	ELECT	47uF	20%	16V
C227	1-126-947-11	ELECT	47uF	20%	16V
C228	1-126-947-11	ELECT	47uF	20%	16V
C229	1-126-947-11	ELECT	47uF	20%	16V
C231	1-126-934-11	ELECT	220uF	20%	16V
C232	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C233	1-126-947-11	ELECT	47uF	20%	16V
C234	1-126-947-11	ELECT	47uF	20%	16V
C242	1-126-924-11	ELECT	330uF	20%	6.3V
C244	1-126-947-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
* CN202	1-568-934-11	PIN, CONNECTOR 7P			
		< DIODE >			
D101	8-719-071-15	DIODE HZM6.8ZWA1TL			

Ref. No.	Part No.	Description	Remark
D102	8-719-071-15	DIODE HZM6.8ZWA1TL	
D103	8-719-071-15	DIODE HZM6.8ZWA1TL	
D104	8-719-071-15	DIODE HZM6.8ZWA1TL	
D201	8-719-914-43	DIODE DAN202K-T-146	
D202	8-719-914-44	DIODE DAP202K-T-146	
D205	8-719-988-61	DIODE 1SS355TE-17	
		< TERMINAL >	
* ET101	1-537-738-21	TERMINAL, EARTH	
* ET202	1-537-738-21	TERMINAL, EARTH	
		< IC >	
IC101	8-759-662-86	IC NJM79M05DL1A (TE2)	
IC102	6-701-820-01	IC LA73053-TLM-E	
IC201	8-759-909-71	IC BA4558F-E2	
IC203	8-759-711-59	IC NJM78L05UA-TE1	
IC204	8-749-017-31	IC GP1FA550TZ	
		< JACK >	
J101	1-815-362-21	JACK, PIN (6P) (LINE OUT)	
J103	1-694-484-21	TERMINAL, S (2P.V) (S VIDEO OUT)	
J104	1-815-360-11	JACK, PIN 3P (COMPONENT VIDEO OUT)	
J201	1-793-446-21	JACK, PIN 1P (DIGITAL OUT-COAXIAL)	
		< SHORT >	
JR100	1-216-295-91	SHORT CHIP 0	
JR101	1-216-295-91	SHORT CHIP 0	
JR102	1-216-295-91	SHORT CHIP 0	
JR103	1-216-295-91	SHORT CHIP 0	
JR104	1-216-295-91	SHORT CHIP 0	
JR105	1-216-295-91	SHORT CHIP 0	
JR106	1-216-295-91	SHORT CHIP 0	
JR107	1-216-295-91	SHORT CHIP 0	
JR108	1-216-295-91	SHORT CHIP 0	
JR109	1-216-295-91	SHORT CHIP 0	
		< COIL >	
L101	1-412-064-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q104	8-729-421-19	TRANSISTOR UN2213-TX	
Q105	8-729-424-08	TRANSISTOR UN2111-TX	
Q106	8-729-424-18	TRANSISTOR UN2113-TX	

Ref. No.	Part No.	Description			Remark
Q107	8-729-421-19	TRANSISTOR	UN2213-TX		
Q201	8-729-049-31	TRANSISTOR	2SB710A-RTX		
Q202	8-729-421-19	TRANSISTOR	UN2213-TX		
Q203	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		
Q204	8-729-027-53	TRANSISTOR	DTC124TKA-T146		
Q205	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q207	6-550-137-01	TRANSISTOR	2SD1938 (F)-ST (TX).SO		
Q208	6-550-137-01	TRANSISTOR	2SD1938 (F)-ST (TX).SO		
Q211	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		
Q216	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
		< RESISTOR >			
R115	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R121	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R126	1-216-021-00	METAL CHIP	68	5%	1/10W
R127	1-216-021-00	METAL CHIP	68	5%	1/10W
R128	1-216-021-00	METAL CHIP	68	5%	1/10W
R129	1-216-073-91	RES-CHIP	10K	5%	1/10W
R130	1-216-021-00	METAL CHIP	68	5%	1/10W
R131	1-216-021-00	METAL CHIP	68	5%	1/10W
R133	1-216-021-00	METAL CHIP	68	5%	1/10W
R134	1-216-021-00	METAL CHIP	68	5%	1/10W
R157	1-216-049-11	RES-CHIP	1K	5%	1/10W
R158	1-216-049-11	RES-CHIP	1K	5%	1/10W
R159	1-216-049-11	RES-CHIP	1K	5%	1/10W
R162	1-216-295-91	SHORT CHIP	0		
R169	1-216-021-00	METAL CHIP	68	5%	1/10W
R170	1-216-021-00	METAL CHIP	68	5%	1/10W
R201	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R202	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R203	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R204	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R205	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R206	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R207	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R208	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R209	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R210	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R211	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R212	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R213	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R216	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R218	1-216-097-11	RES-CHIP	100K	5%	1/10W
R219	1-216-105-91	RES-CHIP	220K	5%	1/10W
R220	1-216-041-00	METAL CHIP	470	5%	1/10W
R221	1-216-073-91	RES-CHIP	10K	5%	1/10W
R222	1-216-073-91	RES-CHIP	10K	5%	1/10W
R224	1-216-073-91	RES-CHIP	10K	5%	1/10W
R225	1-216-089-91	RES-CHIP	47K	5%	1/10W
R226	1-216-041-00	METAL CHIP	470	5%	1/10W
R227	1-216-041-00	METAL CHIP	470	5%	1/10W
R228	1-216-073-91	RES-CHIP	10K	5%	1/10W
R229	1-216-089-91	RES-CHIP	47K	5%	1/10W
R230	1-216-089-91	RES-CHIP	47K	5%	1/10W
R234	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R235	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R238	1-216-097-11	RES-CHIP	100K	5%	1/10W
R240	1-216-041-00	METAL CHIP	470	5%	1/10W
R241	1-216-041-00	METAL CHIP	470	5%	1/10W
R242	1-216-041-00	METAL CHIP	470	5%	1/10W
R243	1-216-041-00	METAL CHIP	470	5%	1/10W
R249	1-216-033-00	METAL CHIP	220	5%	1/10W
R251	1-216-021-00	METAL CHIP	68	5%	1/10W
R252	1-216-073-91	RES-CHIP	10K	5%	1/10W
R253	1-216-049-11	RES-CHIP	1K	5%	1/10W
R254	1-216-049-11	RES-CHIP	1K	5%	1/10W
R256	1-216-049-11	RES-CHIP	1K	5%	1/10W
R259	1-216-295-91	SHORT CHIP	0		
R279	1-216-295-91	SHORT CHIP	0		
R280	1-216-295-91	SHORT CHIP	0		
R282	1-216-295-91	SHORT CHIP	0		
R285	1-216-073-91	RES-CHIP	10K	5%	1/10W
		< SWITCH >			
S101	1-692-989-11	SWITCH, SLIDE (SCAN SELECT)			

IF-92 BOARD, COMPLETE

****

(Ref. No. 1,000 Series)

	3-067-239-01	HOLDER, FL			
		< BUZZER >			
BZ401	1-529-986-11	BUZZER, VOLTAGE			
		< CAPACITOR >			
C401	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C409	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C411	1-126-933-11	ELECT	100uF	20%	16V
C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-137-150-11	FILM	0.01uF	5%	100V
C419	1-104-666-11	ELECT	220uF	20%	25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C421	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C422	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C425	1-119-943-91	ELECT	47uF	20%	50V
C426	1-128-551-11	ELECT	22uF	20%	25V
C427	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-128-551-11	ELECT	22uF	20%	25V
C429	1-104-665-11	ELECT	100uF	20%	25V
C431	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C437	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C440	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C441	1-126-947-11	ELECT	47uF	20%	25V
		< CONNECTOR >			
* CN405	1-785-530-11	PIN, CONNECTOR (PC BOARD) 10P			
CN406	1-815-381-11	CONNECTOR, FPC/FFC 5P			
		< DIODE >			
D403	8-719-041-97	DIODE MA113- (TX)			
D404	8-719-041-97	DIODE MA113- (TX)			
D405	8-719-041-97	DIODE MA113- (TX)			
D406	8-719-041-97	DIODE MA113- (TX)			
D412	8-719-017-62	DIODE MA8068-L-TX			

Ref. No.	Part No.	Description			Remark
D413	8-719-056-06	DIODE SLR-342DCT32 (PROG)			
		< FERRITE BEAD >			
FB401	1-469-324-21	FERRITE	0uH		
		< IC >			
IC403	6-701-875-01	IC LMS8117ADTX-1.8/NOPB			
IC404	6-801-259-01	IC 86CK74AFG-3RD4 (M			
IC405	8-759-684-35	IC S-80830ANUP-EDT-T2			
IC406	8-749-019-11	IC GP1UD28SYK			
		< SHORT >			
JR401	1-216-295-91	SHORT CHIP	0		
JR402	1-216-295-91	SHORT CHIP	0		
JR403	1-216-295-91	SHORT CHIP	0		
		< COIL >			
L401	1-408-978-21	INDUCTOR	47uH		
		< FLUORESCENT INDICATOR >			
ND401	1-518-806-11	TUBE, FLUORESCENT INDICATOR			
		< IC LINK >			
PS401	1-576-509-21	LINK, IC			
PS402	1-576-508-21	LINK, IC			
		< TRANSISTOR >			
Q401	8-729-056-46	TRANSISTOR	2SC5053T100Q		
Q402	8-729-056-46	TRANSISTOR	2SC5053T100Q		
Q404	8-729-048-28	TRANSISTOR	2SD1766-T100-QR		
Q405	8-729-424-08	TRANSISTOR	UN2111-TX		
		< RESISTOR >			
R401	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R414	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R415	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R416	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R417	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R418	1-216-073-91	RES-CHIP	10K	5%	1/10W
R421	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R422	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R423	1-216-081-00	METAL CHIP	22K	5%	1/10W
R424	1-216-013-00	METAL CHIP	33	5%	1/10W
R425	1-216-025-11	RES-CHIP	100	5%	1/10W
R426	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R427	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R428	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R430	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R431	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R433	1-216-073-91	RES-CHIP	10K	5%	1/10W
R434	1-216-073-91	RES-CHIP	10K	5%	1/10W
R435	1-216-073-91	RES-CHIP	10K	5%	1/10W
R437	1-216-027-00	METAL CHIP	120	5%	1/10W
R440	1-216-073-91	RES-CHIP	10K	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-097-11	RES-CHIP	100K	5%	1/10W
R448	1-216-073-91	RES-CHIP	10K	5%	1/10W
R449	1-216-073-91	RES-CHIP	10K	5%	1/10W
R450	1-216-073-91	RES-CHIP	10K	5%	1/10W
R455	1-216-073-91	RES-CHIP	10K	5%	1/10W
R471	1-216-073-91	RES-CHIP	10K	5%	1/10W
R473	1-216-073-91	RES-CHIP	10K	5%	1/10W
R474	1-216-025-11	RES-CHIP	100	5%	1/10W
R481	1-216-025-11	RES-CHIP	100	5%	1/10W
R482	1-216-025-11	RES-CHIP	100	5%	1/10W
R483	1-216-025-11	RES-CHIP	100	5%	1/10W
R484	1-216-025-11	RES-CHIP	100	5%	1/10W
R485	1-216-025-11	RES-CHIP	100	5%	1/10W
R488	1-216-033-00	METAL CHIP	220	5%	1/10W
R489	1-216-097-11	RES-CHIP	100K	5%	1/10W
R490	1-216-083-00	METAL CHIP	27K	5%	1/10W
R496	1-216-017-91	RES-CHIP	47	5%	1/10W
R497	1-216-097-11	RES-CHIP	100K	5%	1/10W
		< SWITCH >			
S401	1-771-349-21	SWITCH, KEYBOARD (TOP MENU)			
S402	1-771-349-21	SWITCH, KEYBOARD (↶ RETURN)			
S403	1-771-349-21	SWITCH, KEYBOARD (MENU)			
S404	1-771-349-21	SWITCH, KEYBOARD (DISPLAY)			
S405	1-771-349-21	SWITCH, KEYBOARD (■)			
S406	1-771-349-21	SWITCH, KEYBOARD (▶▶I)			
S407	1-771-349-21	SWITCH, KEYBOARD (II)			
S408	1-771-349-21	SWITCH, KEYBOARD (I◀◀)			
S409	1-771-349-21	SWITCH, KEYBOARD (⏏)			
S410	1-771-349-21	SWITCH, KEYBOARD (PICTURE MODE)			
S411	1-771-349-21	SWITCH, KEYBOARD (SURROUND)			
S412	1-771-349-21	SWITCH, KEYBOARD (▷)			
		< TRANSFORMER >			
T401	1-437-620-11	TRANSFORMER, DC-DC CONVERTER			
		< VIBRATOR >			
X401	1-781-472-21	VIBRATOR, CERAMIC (8MHz)			

MB-103 BOARD, COMPLETE
****
(Ref. No. 2,000 Series)

		< CAPACITOR >			
C102	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C103	1-126-209-11	ELECT CHIP	100uF	20%	4V
C104	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C105	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C106	1-162-914-11	CERAMIC CHIP	9PF	0.5PF	50V
C107	1-162-914-11	CERAMIC CHIP	9PF	0.5PF	50V
C108	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C109	1-126-209-11	ELECT CHIP	100uF	20%	4V
C110	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C111	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C114	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C120	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C121	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C122	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C125	1-126-607-11	ELECT CHIP	47uF	20%	4V
C126	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C127	1-126-204-11	ELECT CHIP	47uF	20%	16V
C128	1-126-246-11	ELECT CHIP	220uF	20%	4V
C129	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C130	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C201	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C202	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C203	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C210	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C211	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C212	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C213	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C214	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C215	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C216	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C218	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C219	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C220	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C221	1-124-779-00	ELECT CHIP	10uF	20%	16V
C225	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C226	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C228	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C229	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C230	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C232	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C233	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C234	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C236	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C238	1-124-779-00	ELECT CHIP	10uF	20%	16V
C240	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C241	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C242	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C243	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C244	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C245	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C246	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C247	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C248	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C249	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C251	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C252	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C253	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C254	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C255	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C256	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C257	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C258	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C259	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C260	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C261	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C262	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C263	1-124-779-00	ELECT CHIP	10uF	20%	16V
C264	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C265	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C266	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C270	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C271	1-126-204-11	ELECT CHIP	47uF	20%	16V
C272	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C273	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C305	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C308	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C310	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C312	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C313	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C316	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C317	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C318	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C320	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C324	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C326	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C330	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C331	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C335	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C402	1-124-779-00	ELECT CHIP	10uF	20%	16V
C404	1-126-193-11	ELECT	1uF	20%	50V
C406	1-124-779-00	ELECT CHIP	10uF	20%	16V
C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C419	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C422	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C425	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C426	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C429	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C435	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C438	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C439	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C441	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

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Ref. No.	Part No.	Description			Remark
C442	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C446	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C447	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C449	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C501	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C502	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C503	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C504	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C506	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C507	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C508	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C509	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C510	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C511	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C512	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C515	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C517	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C518	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C520	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C521	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C526	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C527	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C528	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C529	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C531	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C532	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C533	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C534	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C537	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C538	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C539	1-164-733-11	CERAMIC CHIP	820PF	10%	50V
C540	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C541	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C542	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C543	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C544	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C545	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C546	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C601	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C602	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C603	1-124-779-00	ELECT CHIP	10uF	20%	16V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
* CN102	1-770-154-11	PIN, CONNECTOR (PC BOARD) 6P			
* CN103	1-770-470-21	PIN, CONNECTOR (PC BOARD) 6P			
CN203	1-815-507-21	CONNECTOR, FFC/FPC 26P			
		< FERRITE BEAD >			
FB103	1-469-324-21	FERRITE	0uH		
FB104	1-469-324-21	FERRITE	0uH		
FB105	1-469-324-21	FERRITE	0uH		
FB106	1-469-324-21	FERRITE	0uH		
FB107	1-469-324-21	FERRITE	0uH		
FB108	1-469-324-21	FERRITE	0uH		

Ref. No.	Part No.	Description			Remark
FB109	1-469-324-21	FERRITE	0uH		
FB111	1-469-324-21	FERRITE	0uH		
		< FILTER >			
FL101	1-234-177-21	FERRITE	0uH		
FL102	1-234-177-21	FERRITE	0uH		
FL103	1-234-177-21	FERRITE	0uH		
FL104	1-234-177-21	FERRITE	0uH		
FL105	1-234-177-21	FERRITE	0uH		
FL106	1-234-177-21	FERRITE	0uH		
FL108	1-234-177-21	FERRITE	0uH		
FL109	1-233-893-21	FILTER, CHIP EMI			
FL110	1-234-177-21	FERRITE	0uH		
FL201	1-234-177-21	FERRITE	0uH		
FL402	1-234-177-21	FERRITE	0uH		
FL403	1-234-177-21	FERRITE	0uH		
FL404	1-234-177-21	FERRITE	0uH		
		< IC >			
IC101	8-759-643-29	IC	BR24C64F-E2		
IC103	6-701-877-01	IC	SM8707EV-G-E2		
IC104	6-701-837-01	IC	MB91307RPFV-G-BND-E1		
IC107	6-802-252-01	IC	MR27V3202F-7RTPZ04B		
IC108	6-701-874-01	IC	IDT71V016SA15PH8 (SCD2994)		
IC201	6-701-700-01	IC	SP3728ACB		
IC202	6-701-878-01	IC	FAN8034L		
IC301	6-701-876-01	IC	CXD9703R		
IC302	8-759-599-45	IC	MM1385ENLE		
IC303	8-759-643-10	IC	GM71V18160CT-6TR		
IC401	6-702-300-01	IC	TK11118CSCL-G		
IC403	8-752-416-45	IC	CXD1935Q		
IC404	6-700-353-01	IC	MT48LC1M16A1TG-6STR		
IC405	6-700-353-01	IC	MT48LC1M16A1TG-6STR		
IC501	8-759-588-58	IC	MM1385NNLE		
IC502	6-701-814-01	IC	CXD9698R		
IC503	6-700-353-01	IC	MT48LC1M16A1TG-6STR		
IC504	6-701-079-01	IC	ADV7300AKST		
IC505	8-759-588-58	IC	MM1385NNLE		
IC601	6-701-565-01	IC	CXD9627A-E2		
		< COIL >			
L101	1-414-410-21	INDUCTOR	10uH		
L201	1-412-031-11	INDUCTOR CHIP	47uH		
L202	1-412-031-11	INDUCTOR CHIP	47uH		
		< TRANSISTOR >			
Q201	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
Q202	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
		< RESISTOR >			
R103	1-216-809-11	METAL CHIP	100	5%	1/10W
R104	1-216-809-11	METAL CHIP	100	5%	1/10W
R105	1-216-809-11	METAL CHIP	100	5%	1/10W
R106	1-216-809-11	METAL CHIP	100	5%	1/10W
R108	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R110	1-216-821-11	METAL CHIP	1K	5%	1/10W
R111	1-216-809-11	METAL CHIP	100	5%	1/10W
R112	1-216-809-11	METAL CHIP	100	5%	1/10W
R113	1-216-837-11	METAL CHIP	22K	5%	1/10W
R114	1-216-864-11	SHORT	0		

Ref. No.	Part No.	Description			Remark
R116	1-216-801-11	METAL CHIP	22	5%	1/10W
R117	1-216-821-11	METAL CHIP	1K	5%	1/10W
R118	1-216-845-11	METAL CHIP	100K	5%	1/10W
R119	1-216-845-11	METAL CHIP	100K	5%	1/10W
R120	1-216-821-11	METAL CHIP	1K	5%	1/10W
R121	1-216-821-11	METAL CHIP	1K	5%	1/10W
R123	1-216-833-11	METAL CHIP	10K	5%	1/10W
R124	1-216-833-11	METAL CHIP	10K	5%	1/10W
R128	1-216-809-11	METAL CHIP	100	5%	1/10W
R129	1-216-809-11	METAL CHIP	100	5%	1/10W
R130	1-216-809-11	METAL CHIP	100	5%	1/10W
R131	1-216-809-11	METAL CHIP	100	5%	1/10W
R132	1-216-864-11	SHORT	0		
R133	1-216-864-11	SHORT	0		
R134	1-216-801-11	METAL CHIP	22	5%	1/10W
R136	1-216-801-11	METAL CHIP	22	5%	1/10W
R137	1-216-801-11	METAL CHIP	22	5%	1/10W
R139	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R141	1-216-833-11	METAL CHIP	10K	5%	1/10W
R150	1-216-833-11	METAL CHIP	10K	5%	1/10W
R156	1-216-833-11	METAL CHIP	10K	5%	1/10W
R157	1-216-864-11	SHORT	0		
R159	1-216-864-11	SHORT	0		
R160	1-216-864-11	SHORT	0		
R161	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R163	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R165	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R166	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R168	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R176	1-216-864-11	SHORT	0		
R177	1-216-833-11	METAL CHIP	10K	5%	1/10W
R178	1-216-833-11	METAL CHIP	10K	5%	1/10W
R180	1-216-809-11	METAL CHIP	100	5%	1/10W
R181	1-216-864-11	SHORT	0		
R182	1-216-809-11	METAL CHIP	100	5%	1/10W
R183	1-216-809-11	METAL CHIP	100	5%	1/10W
R184	1-216-833-11	METAL CHIP	10K	5%	1/10W
R185	1-216-821-11	METAL CHIP	1K	5%	1/10W
R187	1-216-864-11	SHORT	0		
R206	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R207	1-216-809-11	METAL CHIP	100	5%	1/10W
R210	1-216-815-11	METAL CHIP	330	5%	1/10W
R211	1-216-809-11	METAL CHIP	100	5%	1/10W
R212	1-216-809-11	METAL CHIP	100	5%	1/10W
R213	1-216-833-11	METAL CHIP	10K	5%	1/10W
R214	1-216-833-11	METAL CHIP	10K	5%	1/10W
R216	1-216-821-11	METAL CHIP	1K	5%	1/10W
R217	1-216-821-11	METAL CHIP	1K	5%	1/10W
R218	1-216-846-11	METAL CHIP	120K	5%	1/10W
R219	1-216-846-11	METAL CHIP	120K	5%	1/10W
R220	1-216-847-11	METAL CHIP	150K	5%	1/10W
R221	1-216-847-11	METAL CHIP	150K	5%	1/10W
R222	1-216-842-11	METAL CHIP	56K	5%	1/10W
R223	1-216-842-11	METAL CHIP	56K	5%	1/10W
R224	1-216-850-11	METAL CHIP	270K	5%	1/10W
R225	1-216-833-11	METAL CHIP	10K	5%	1/10W
R226	1-216-853-11	METAL CHIP	470K	5%	1/10W
R227	1-216-846-11	METAL CHIP	120K	5%	1/10W
R229	1-216-833-11	METAL CHIP	10K	5%	1/10W
R230	1-216-839-11	METAL CHIP	33K	5%	1/10W
R231	1-216-855-11	METAL CHIP	680K	5%	1/10W
R232	1-216-839-11	METAL CHIP	33K	5%	1/10W
R233	1-216-853-11	METAL CHIP	470K	5%	1/10W
R234	1-216-803-11	METAL CHIP	33	5%	1/10W
R235	1-216-809-11	METAL CHIP	100	5%	1/10W
R236	1-216-803-11	METAL CHIP	33	5%	1/10W
R238	1-216-839-11	METAL CHIP	33K	5%	1/10W
R239	1-216-839-11	METAL CHIP	33K	5%	1/10W
R240	1-216-839-11	METAL CHIP	33K	5%	1/10W
R241	1-216-839-11	METAL CHIP	33K	5%	1/10W
R242	1-216-849-11	METAL CHIP	220K	5%	1/10W
R243	1-216-853-11	METAL CHIP	470K	5%	1/10W
R244	1-216-821-11	METAL CHIP	1K	5%	1/10W
R245	1-216-841-11	METAL CHIP	47K	5%	1/10W
R246	1-216-809-11	METAL CHIP	100	5%	1/10W
R248	1-216-803-11	METAL CHIP	33	5%	1/10W
R249	1-216-803-11	METAL CHIP	33	5%	1/10W
R250	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R251	1-216-841-11	METAL CHIP	47K	5%	1/10W
R252	1-216-839-11	METAL CHIP	33K	5%	1/10W
R253	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R254	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R255	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R256	1-216-809-11	METAL CHIP	100	5%	1/10W
R259	1-216-833-11	METAL CHIP	10K	5%	1/10W
R260	1-216-834-11	METAL CHIP	12K	5%	1/10W
R261	1-216-833-11	METAL CHIP	10K	5%	1/10W
R262	1-216-815-11	METAL CHIP	330	5%	1/10W
R263	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
R264	1-216-845-11	METAL CHIP	100K	5%	1/10W
R265	1-216-838-11	METAL CHIP	27K	5%	1/10W
R269	1-216-833-11	METAL CHIP	10K	5%	1/10W
R273	1-216-864-11	SHORT	0		
R301	1-216-295-91	SHORT	0		
R302	1-216-295-91	SHORT	0		
R303	1-216-821-11	METAL CHIP	1K	5%	1/10W
R311	1-216-809-11	METAL CHIP	100	5%	1/10W
R312	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R313	1-216-817-11	METAL CHIP	470	5%	1/10W
R314	1-216-817-11	METAL CHIP	470	5%	1/10W
R315	1-216-817-11	METAL CHIP	470	5%	1/10W
R316	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R317	1-216-833-11	METAL CHIP	10K	5%	1/10W
R318	1-216-817-11	METAL CHIP	470	5%	1/10W
R319	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R320	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R321	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R322	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R323	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R324	1-216-833-11	METAL CHIP	10K	5%	1/10W
R325	1-218-867-11	RES-CHIP	6.8K	5%	1/10W
R326	1-216-833-11	METAL CHIP	10K	5%	1/10W
R327	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R328	1-216-838-11	METAL CHIP	27K	5%	1/10W
R329	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R330	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R331	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R332	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R333	1-216-847-11	METAL CHIP	150K	5%	1/10W
R334	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W

Ref. No.	Part No.	Description			Remark
R335	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R336	1-216-833-11	METAL CHIP	10K	5%	1/10W
R346	1-216-833-11	METAL CHIP	10K	5%	1/10W
R347	1-216-833-11	METAL CHIP	10K	5%	1/10W
R348	1-216-833-11	METAL CHIP	10K	5%	1/10W
R349	1-216-833-11	METAL CHIP	10K	5%	1/10W
R351	1-216-295-91	SHORT	0		
R352	1-216-295-91	SHORT	0		
R358	1-216-833-11	METAL CHIP	10K	5%	1/10W
R359	1-216-833-11	METAL CHIP	10K	5%	1/10W
R360	1-216-809-11	METAL CHIP	100	5%	1/10W
R402	1-216-295-91	SHORT	0		
R405	1-216-809-11	METAL CHIP	100	5%	1/10W
R412	1-216-833-11	METAL CHIP	10K	5%	1/10W
R413	1-218-867-11	RES-CHIP	6.8K	5%	1/10W
R414	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R415	1-216-797-11	METAL CHIP	10	5%	1/10W
R423	1-216-833-11	METAL CHIP	10K	5%	1/10W
R426	1-216-833-11	METAL CHIP	10K	5%	1/10W
R430	1-216-797-11	METAL CHIP	10	5%	1/10W
R436	1-216-864-11	SHORT	0		
R438	1-216-864-11	SHORT	0		
R439	1-216-864-11	SHORT	0		
R507	1-216-809-11	METAL CHIP	100	5%	1/10W
R511	1-216-809-11	METAL CHIP	100	5%	1/10W
R512	1-216-864-11	SHORT	0		
R513	1-218-285-11	RES-CHIP	75	5%	1/10W
R514	1-218-292-11	RES-CHIP	20K	5%	1/10W
R536	1-216-809-11	METAL CHIP	100	5%	1/10W
R558	1-216-809-11	METAL CHIP	100	5%	1/10W
R559	1-216-809-11	METAL CHIP	100	5%	1/10W
R568	1-216-819-11	METAL CHIP	680	5%	1/10W
R570	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R571	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R573	1-216-809-11	METAL CHIP	100	5%	1/10W
R574	1-218-834-11	METAL CHIP	300	0.5%	1/10W
R575	1-218-834-11	METAL CHIP	300	0.5%	1/10W
R576	1-218-834-11	METAL CHIP	300	0.5%	1/10W
R577	1-218-834-11	METAL CHIP	300	0.5%	1/10W
R578	1-218-834-11	METAL CHIP	300	0.5%	1/10W
R579	1-218-834-11	METAL CHIP	300	0.5%	1/10W
R585	1-216-833-11	METAL CHIP	10K	5%	1/10W
R601	1-216-809-11	METAL CHIP	100	5%	1/10W
R613	1-216-864-11	SHORT	0		
R614	1-216-864-11	SHORT	0		
R619	1-216-864-11	SHORT	0		
		< COMPOSITION CIRCUIT BLOCK >			
* RB102	1-233-270-11	NETWORK, RES (8 GANG) 10K			
		< VARIABLE RESISTOR >			
RV501	1-223-583-41	RES, ADJ, CARBON (3 TYPE) 1K (VIDEO LEVEL ADJ)			
RV502	1-223-583-41	RES, ADJ, CARBON (3 TYPE) 1K (PROG VIDEO LEVEL ADJ)			

Ref. No.	Part No.	Description	Remark
		< VIBRATOR >	
X101	1-795-174-11	VIBRATOR, CERAMIC (16.5MHz)	
X102	1-781-867-21	VIBRATOR, CRYSTAL (27MHz)	
		MS-81 BOARD	
		**********	
		(Ref. No. 1,000 Series)	
		< CONNECTOR >	
CN001	1-815-412-11	CONNECTOR, FFC/FPC 5P	
		< SWITCH >	
S001	1-786-133-11	SWITCH, ROTARY (CHUCK/TRAY DETECT)	
	1-468-650-11	POWER BLOCK (HS12S1U)	
		**********	
		(Ref. No. 1,000 Series)	
		< FUSE >	
⚠F101	1-533-296-11	FUSE (2A/125V)	
		MISCELLANEOUS	
		**********	
7	1-786-131-11	SWITCH, TACTILE	
11	1-757-693-11	CABLE, FLEXIBLE FLAT (FMO-001)	
12	1-757-694-11	CABLE, FLEXIBLE FLAT (FMO-002)	
13	1-757-697-11	CABLE, FLEXIBLE FLAT (FMM-035)	
⚠53	1-783-531-31	CORD, POWER	
⚠104	A-6062-709-A	KHM-240AAA SERVICE ASSY	
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-477-211-11	REMOTE COMMANDER (RMT-D145A)	
	1-751-271-11	CORD, CONNECTION (STEREO AV CABLE 1.5m)	
	3-074-927-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-074-927-21	MANUAL, INSTRUCTION (FRENCH) (Canadian)	
	3-071-119-11	CASE, BATTERY (for RMT-D145A)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-929-720-11

Sony Corporation
Home Video Campany

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